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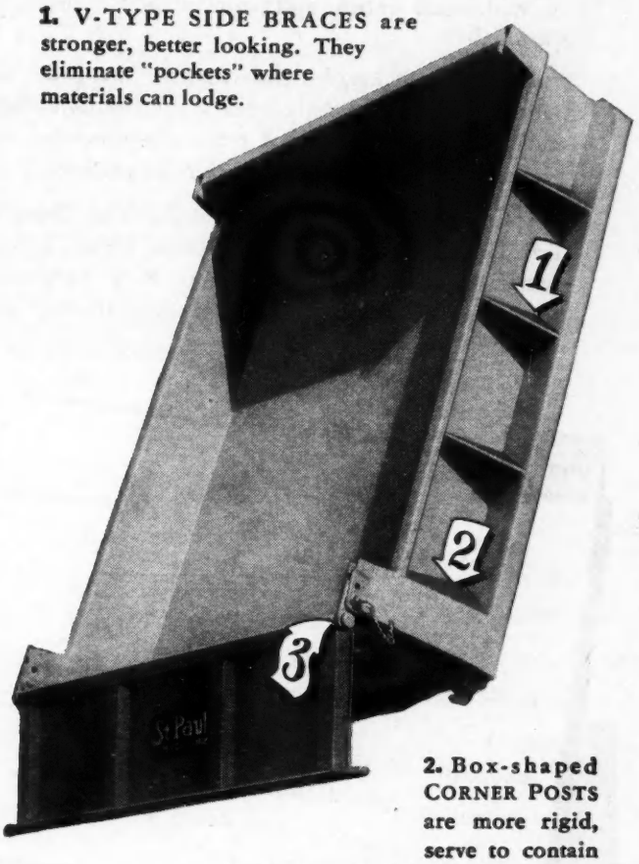

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Performance Report of an INTERNATIONAL KS-11

Costs go down and profits go up when trucks are big enough and strong enough for loads and roads ... with axle ratios and transmissions correctly specified.

The value of *ample truck capacity and power* is being demonstrated daily by new International KR and KS-11's ... trucks that were recommended in precise terms of the jobs they were to perform.

The truck below is an example. The Dakota Transfer & Storage Co., Minneapolis, Minn., is the owner. In his performance report, R. J. Babcock, president, says of the eight Internationals that his transfer company operates:

"We have just completed an audit of fuel consumption of our KS-11 trucks powered by the Red Diamond 450 engine. We find that on the Grand Forks round trip of 750 miles, these units require only 120 gallons of fuel. This we believe, will be a little higher for warmer weather because we idle the engine a good deal as no anti-freeze is used. In other words, the truck engine runs constantly during the 24 hours the vehicle is away from Minneapolis.

"We are well satisfied with this record of approximately six miles per gallon with payloads as great as 40,000 pounds.

"We have one unit with Red Diamond engine that has traveled 80,000 miles without any service other than preventive maintenance at every 600 miles. **These KS-11 trucks with Red Diamond engines unquestionably are the best Internationals we have ever had!"**

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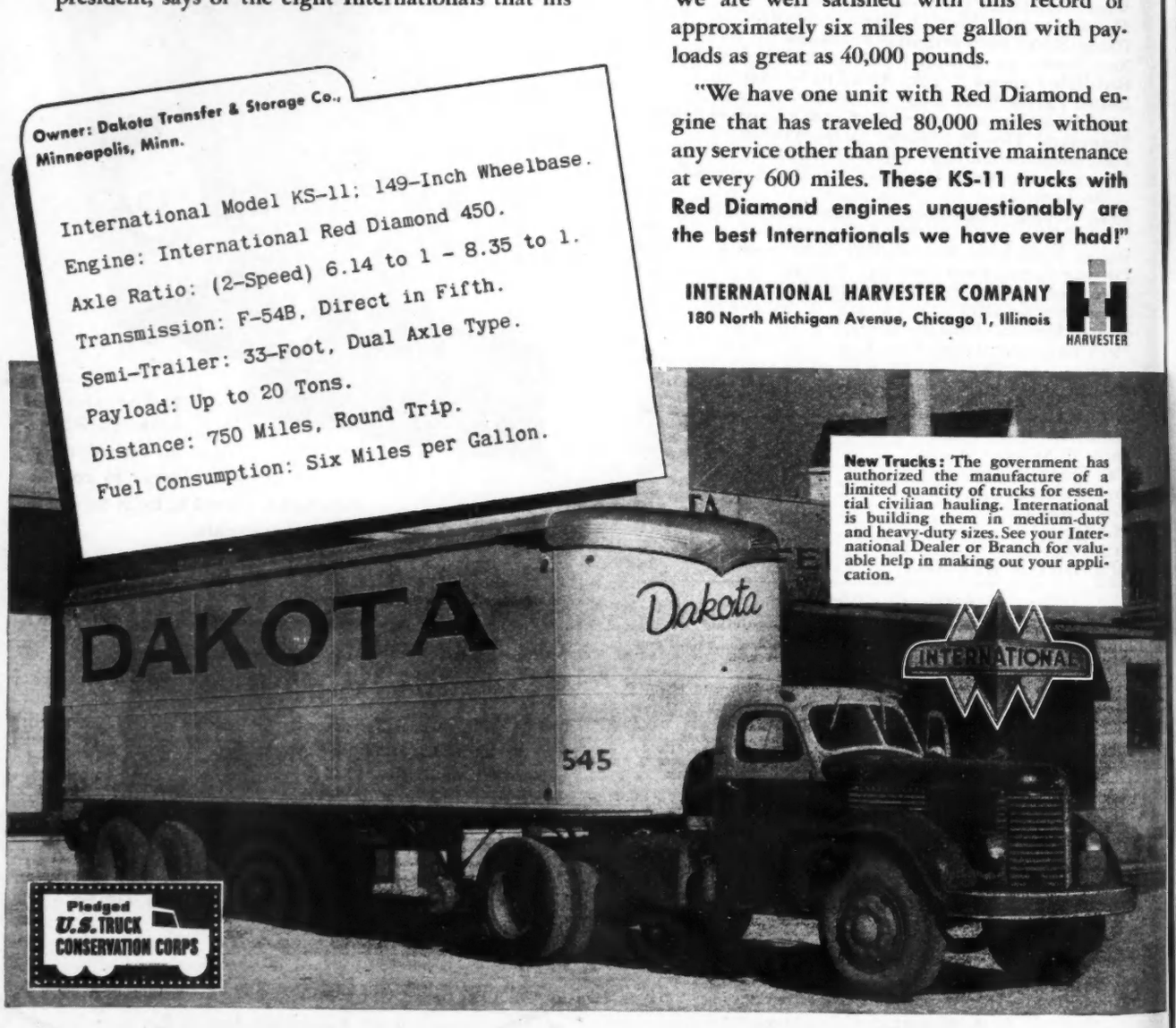
HARVESTER

Owner: Dakota Transfer & Storage Co., Minneapolis, Minn.

International Model KS-11: 149-Inch Wheelbase.
Engine: International Red Diamond 450.
Axle Ratio: (2-Speed) 6.14 to 1 - 8.35 to 1.
Transmission: F-54B, Direct in Fifth.
Semi-Trailer: 33-Foot, Dual Axle Type.
Payload: Up to 20 Tons.
Distance: 750 Miles, Round Trip.
Fuel Consumption: Six Miles per Gallon.



New Trucks: The government has authorized the manufacture of a limited quantity of trucks for essential civilian hauling. International is building them in medium-duty and heavy-duty sizes. See your International Dealer or Branch for valuable help in making out your application.

Pledged U.S. TRUCK CONSERVATION CORPS

INTERNATIONAL *Trucks*

COMMERCIAL CAR JOURNAL

Vol. LXVIII, No. 4 December, 1944

New "Certificate of Imminent Breakdown" . . . Component Unit Bonanza . . . Tighter Tire Situation in First Quarter . . . December Quota 120,000 Tires . . . Army Protests on Heavies . . . Rationing Statistics . . . Army Probed on Parts . . . Etc. etc.

by GEORGE T. HOOK

"Imminent Breakdown"

The "Certificate of Imminent Breakdown" is something new and specially designed for fleet operators. It will enable them to get repair parts in advance of actual need. In short, it makes possible preventive maintenance replacements to avoid breakdowns and to conserve materials and man-hours. This new certification will enjoy a priority with manufacturers just below that of the "Certificate of Emergency Repair" and above normal stock orders. As mentioned in this department last month, this plan to provide truck operators with parts needed to make preventive maintenance replacements was originated by the ODT Vehicle Maintenance Section. The Automotive Division of the War Production Board has seen the merit of the idea and has gone along with ODT's recommendation. But most of the work involved will be done by ODT personnel. Here is how the plan will work:

How the Plan Works

First the operator seeks the assistance of the ODT Maintenance Specialist in his district if needed parts are not obtainable and reports the danger of imminent breakdown. The specialist will investigate the merits of the case. If he finds that it has merit he will fill out form ODT-MT-109 and under "Comments on Shortages" he will make the following certification: "Although the above vehicle is not out of service, we have investigated and certified that the above part or parts are needed at once to replace the damaged part or parts, which if they further deteriorate, may cause excessive damage to the Vehicle." This "Certificate of Imminent Breakdown" will be signed by the ODT Maintenance Specialist and countersigned by the chairman of the ODT Maintenance Advisory Committee or his authorized deputy.

A Job for Specialists

Next the ODT Maintenance Specialist will try to locate the part or parts from sources not above the distributor or jobber level. If he fails, he will refer the case to the nearest WPB Regional Automotive Specialist, who will communicate with the manufacturer of the part for a shipping date. The WPB specialist will request that the manufacturer endeavor to ship this part after completing orders which bear a "Certificate of Emergency Repair" and before making shipments on normal stock orders. Finally it will be the duty of the ODT specialist to see that the part when shipped to the distributor or dealer is delivered to the operator who originated the request.

Component Unit Bonanza

The so-called "Rehabilitation Program" under which manufacturers undertook to make component units such as engines, transmissions and rear axles for unit replacement purposes, is bearing fruit exceeding all expectations. (It is under this program that fleet operators are able to

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(CONTINUED FROM PAGE 35)

procure one set of such component units for each 25 trucks operated.) Whereas the original program called for the manufacture of 166,211 complete engines in 1944, this number has already been passed and is expected to reach 200,000 by year's end. This total does not include engines made by Ford, which had a program separate from that initiated by ODT and approved by WPB. The rear axle program called for 7600 complete units; more than 10,000 are expected to be produced. The transmission program of 18,000 units may just be reached. Of the transmission program 14,000 units will be produced by Chevrolet. Authorities insist, and there is no reason to doubt them, that this rehabilitation program has not interfered with the truck production program. Truck operators apparently are taking advantage of this opportunity to acquire components for unit replacement purposes. One manufacturer who engaged in the program to the extent of 2000 engines, has 10,000 orders on hand. Another manufacturer who is scheduled to produce 75,000 engines has 40,000 more orders on the books.

Peculiar Parts

ODT and WPB are making progress in persuading truck factories to build peculiar parts for vehicles being released by the Army. Unless such parts as transfer cases, propeller shafts, front axles for 4-wheel-drives, etc., are provided, it will be impossible for dealers to put many of the Army vehicles in serviceable condition prior to resale to civilians. Chevrolet has informed its dealers that peculiar parts will be made available to them. The Army has released 15,000 Dodge trucks and similar action is expected in the case of Dodge. Authorities take pains to point out that the L-158 automotive parts production order permits manufacturers to build the peculiar parts, and therefore Washington cannot be blamed if the parts are not made available.

Tighter Tire Situation

In spite of an improvement in tire production in sizes 8.25 and up, capital circles predict a tighter situation in these sizes in the first quarter of 1945 than prevailed during the last quarter of 1944. They point out that the combined military and essential civilian demand is twice the productive capacity. The Army, moreover, has become more insistent in its demands for more tires. Negotiations were under way late in November with the ODT equally insistent that civilian truck transportation cannot be expected to work miracles indefinitely and that from here in its too much of a gamble to short-ration it on tires. To bolster its story the ODT called in tire factory experts who, in effect, told the Army that tire carcasses had about reached the limit of recapability and that the S-6 synthetic tire now being furnished truck operators cannot be expected to give the recap mileage of tires previously produced. Meanwhile WPB permitted OPA to boost the 8.25 and up civilian quota to 120,000 in December. This is 10,000 better than the November quota and 15,000 better than the 105,000 originally slated. The 1945 first quarter quota in these sizes may be 104,000 monthly.

Army Protests on Heavies

The Army also was protesting WPB's 1945 light-heavy and heavy-heavy truck production allocations to ODT, production which is intended for civilian users. The Army was battling to slash it in half. As tentatively set up ODT has been allocated 40,000 light, 160,000 medium, 53,464 light-heavy and 15,800 heavy-heavy trucks out of total 1945 truck production close to the 900,000 mark. ODT's share, in round numbers, is 269,000. ODT had joined the issue with the Army and was striving hard to have the WPB approve the tentative light-heavy and heavy-heavy allocations.

Heavies in the Pool

Reports, emanating from WPB sources, have been circulating to the effect that ODT has enough light-heavy and heavy-heavy trucks in the ration pool to last until April 1 at the current rate of transfer. This department asked some questions and learned the following: On Nov. 1 there were supposed to be 400 light-heavy and 1870 heavy-heavy trucks remaining in the ration pool. Because of the way the Automotive Division of WPB kept its books, ODT has no way of determining from the records turned over to it by WPB whether the trucks belong to ODT or to the Government's Foreign Economic Administration. Truck manufacturers are being asked to give WPB an inventory of branch and dealer stocks of such trucks by models. With these figures on hand the ODT can start the New Year with accurate statistics by adding December production and deducting outstanding certificates.

Anti-Flood Formula

In some ODT quarters spreading of the above report is attributed to WPB Automotive Division jealousy of the allocation job that ODT is doing. Whereas when WPB had control of rationing it took days and weeks to process applications reaching Washington, the ODT is now on a 24 to 48-hour basis. Frequently applications received in the morning mail go through the mill and are in the outgoing mail that evening. There is no backlog and the Allocation Section of ODT is anxious that none be created. It is fearful that one might be precipitated when WPB announces 1945 truck production and truck operators rush in with their applications without stopping to realize that those trucks will not be available in the first few months of

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The White Super Power Tractor shown here is pulling an 85-ft., 70-ton barge through the streets of an Australian city enroute to the coast. Motor transport such as this enabled the Australians to build boats inland as well as on the coast

★ ★ ★ EDITORIALS ★ ★ ★

The Case of the Baker Versus the ODT

IN a recent case an ODT district manager denied to a bakery the right to operate a private motor truck on a wholesale route. He contended there was no need for this truck because one or more common carrier motor trucks passed once a day through the towns on the proposed route. On appeal the case went right up to "Steamboat" Johnson, director of the ODT. "Steamboat" pulled the stop whistle and upheld the district manager. The final, unappealable decision was made and signed by the director.

But the bakery operator refused to take "no" for an answer. Instead of resorting to the courts for legal adjudication he appealed the case to his fellow citizens. Chambers of Commerce supported his application, as did prospective customers.

So "Steamboat" blew the whistle again. This time it was the signal for the district manager to restudy the case. In due time the bakery operator was told that he could operate the truck. This permission came from the district manager who, in this fashion, was empowered to revoke the decision of his boss.

To correct a mistake in this unorthodox manner is a virtue, an especially brilliant virtue where bureaucracy is concerned. It also gives promise that a fundamental issue, which this case served to emphasize, may be adjusted with no greater regard for official "face."

This fundamental issue, which has aroused organized private truck operators, rests in the section of General Order ODT 21A which cites the conditions under which a certificate of war necessity may be issued. Private truck operators claim that, as currently interpreted by ODT officials, this section denies them the right to render their services or to extend them beyond their present scope if "any existing means of transportation" are available. They claim the language of this section to be so drastic that "a private motor truck operator may be denied the right to extend his services to the public if there are transportation services available by rail or highway common carrier, express company, parcel post or any other type of for-hire transportation."

ODT officials deny any such drastic intent and feel that the private truck group is unduly alarmed. This is just the right atmosphere for adjusting the issue to mutual satisfaction. If ODT admits that it did not intend to scare private truck operators out of their wits, there will be no loss of face if the scary section is amended to rid it of ghosts and goblins.

ODT got its finger in this particular wringer because it denied the private truck group the privilege of prior consultation which had previously been agreed upon. The ODT hierarchy had its own logical reasons for the denial, but it must be apparent from subsequent events that the course pursued was fundamentally unsound.

In the making of laws that affect the public the Congress of the United States does not consider it beneath its dignity or a forfeiture of privileges to hold hearings at which the public may voice objections or approval. This suggests that the servant ought not to consider it debasing to follow the example of the master.

Harbinger of Change

HEADING for the Union Station in Washington the taxi was, as usual, full. The driver, too, was full —of sad thoughts—which apparently he could no longer contain. He spoke so vehemently that he galvanized four pairs of ears into rapt attention.

"There are a helluva lot of taxi drivers in this man's town that are going to be looking for jobs pretty soon. The business is shot to hell."

The one reporter in the cab took this as an invitation to ask the one question that would get right to the nub of the matter: "What are you grossing these days?"

"Well," said the taxi driver as unhesitatingly as he took the amber light that flashed at that very moment, "last year at this time I was grossing around $35 a day. Now it's down to around $8.50. That's less than my expenses.

"How do you account for it?" the reporter asked.

The taxi driver obviously had done some figuring because he had the answer on the tip of his tongue.

"There don't seem to be as many manufacturers' representatives in town as there used to be. This time last year the woods was full of them. Now they're as scarce as touchdowns against the Army. And it looks as if from here in things is going to be a lot worse. I'm looking around for a job right now."

It was a portent of welcome change. Four fares promptly celebrated the event. Each gave him fifty cents for a twenty-cent ride.

A Tribute and a Tip

THE sections of the Office of Defense Transportation with which fleet operators are most familiar are those that impose and administer restrictions. The pain they inflict makes the impression.

A less familiar section is one that from ODT's beginning has sought to provide operators with relief from onerous conditions brought on by the war emergency. And before the corpse of ODT is laid away we consider it a duty to arise and say a few words about the Vehicle Maintenance Section.

It is true that at the outset the section stumbled around and in the

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THE NEED & THE PROBLEM

How much wear can be tolerated before a part must be replaced and scrapped or salvaged?

How much can be accepted as normal so that a part may be expected to last until the next overhaul?

Fleet operators have desired the answers to these questions for many years. The Army saw the need of them and got the answers for military vehicles. Civilian users will have to wait until the war is over to get similar treatment.

The vehicle manufacturer develops the balanced selection of units that comprise his truck. It is to him that operators must look for wear data. His problem is complicated. The same truck is employed in a variety of services and maintenance standards may differ with fleets. But the manufacturer is aware of the problem and something will be done when he is relieved of the pressure of war work.

This article discusses the problem and provides some available data.

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Wear Standards a Postwar Possibility

Survey by Commercial Car Journal indicates truck makers, not parts producers, are logical source of maintenance data long needed for truly efficient operation

by JOSEPH GESCHELIN
Commercial Car Journal Detroit Technical Editor

IN NORMAL and abnormal times the fleetman is confronted with the problem of how to maintain mechanical parts and assemblies in good running condition. By proper preventive maintenance procedures, by the establishment of periodic inspection and regular overhaul periods, the fleetman keeps things under control. However, even with the best procedures there still remains the basic question—how much wear can be tolerated before a part must be replaced and scrapped or salvaged?

For many years your editors have been seeking this key to good maintenance practice. From a practical standpoint, the fleetman must have well-organized and realistic data as to the amount of wear that can be tolerated. It is recognized further that on parts such as brake drums or cylinder barrels or crankshafts there is a limit to the amount of wear or metal removal and such limiting values must be made known by the manufacturer.

Then there is the problem of operating economy—gone by the board, of course, during the war. The problem is this: when a major unit is torn down for inspection or overhaul, how much wear can be accepted as normal so that the part may be expected to last until the next overhaul? Unless the fleetman knows such limitations from experience a part may fail in-between overhauls and thus entail the costly procedure of tying up the vehicle while rebuilding a unit which had been rebuilt only a short time back.

Considering the overall problem, let us recognize, first, that the establishment of original specifications for clearances and fits rests with the producers of parts—engines, clutches, transmissions, axles, etc. They possess the background of many years of design, of development, of manufacturing. Too, they are the ones who guarantee performance. But in the final analysis it's the vehicle manufacturer who selects the basic units. Based upon many years of experience in serving the fleets, he develops the balanced selection of units —by makes, by types, by sizes.

Ultimately, then, it is the vehicle manufacturer to whom we must look for wear data. What complicates his situation is that the same truck may have different maintenance standards depending upon the nature of the operation in which it is employed. It's almost like saying that the standards established for maintenance may differ for each fleet; and further, upon the nature of the service for each vehicle in a particular fleet.

In essence, it appears that before a vehicle manufacturer sticks out his neck on definite recommendations to the field, he, in turn, will have to base his findings upon the experience of his users. It is a sort of vicious

TABLE 1—MUSKEGON PISTON RING

1 TO 4¾ INCH DIAMETER
RECOMMENDED DIMENSIONS AND CLEARANCES FOR PISTON GROOVES

	1/16 in.	5/64 in.	3/32 in.	1/8 in.	5/32 in.	3/16 in.	1/4 in.
All Ring Widths	.062	.0775	.093	.1235	.1545	.186	.2485
	.0625	.078	.0935	.124	.155	.1865	.249
Top Compression—Groove Width	.064	.0795	.095	.1255	.1565	.188	.2505
	.065	.0805	.096	.1265	.1575	.189	.2515
Top Compression—Clearance—New	.0015	.0015	.0015	.0015	.0015	.0015	.0015
	.003	.003	.003	.003	.003	.003	.003
Top Compression—Maximum Serviceable Clearance	.005	.005	.005	.005	.005	.005	.005
Other Comp. and Oil—Groove Width	.0635	.079	.0945	.125	.156	.1875	.250
	.0645	.080	.0955	.126	.157	.1885	.251
Other Comp. and Oil—Clearance—New	.001	.001	.001	.001	.001	.001	.001
	.0025	.0025	.0025	.0025	.0025	.0025	.0025
Other Comp. and Oil—Maximum Serviceable Clearance	.005	.005	.005	.005	.005	.005	.005

NOTES

1. Data above covers recommendations for side clearance for single piece "Snap" rings, and also for cast iron ring with expanders or springs. On multiple piece oil rings using steel rails or segments, additional clearance is preferred. Normally, a total side clearance of .006 inch to .012 inch is recommended for oil control rings of this type.
2. Ring gap or end clearance for automotive engines should be .003 to .005 inch per inch of diameter for all usual types of oil and compression rings.
3. A minimum groove clearance behind the ring of .005 inch per inch of diameter is normally recommended. When using expander type rings, the depth of groove or the clearance behind the ring is most important. For proper functioning expander type rings must be used on pistons of specified dimensions.

RING SIDE CLEARANCE IN GROOVE

	Top Groove			Second Groove			Other Grooves		
		Serviceable			Serviceable			Serviceable	
	Recommended	Min.	Max.	Recommended	Min.	Max.	Recommended	Min.	Max.
4 Cycle Gasoline	.002 in.	.0015 in.	.005 in.	.0015 in.	.001 in.	.004 in.	.0015 in.	.001 in.	.004 in.
2 Cycle Gasoline	.004 in.	.004 in.	.008 in.	.003 in.	.003 in.	.006 in.	.002 in.	.002 in.	.005 in.
4 Cycle Diesel	.004 in.	.004 in.	.008 in.	.003 in.	.003 in.	.006 in.	.002 in.	.002 in.	.005 in.
2 Cycle Diesel	.006 in.	.006 in.	.010 in.	.004 in.	.004 in.	.007 in.	.003 in.	.003 in.	.006 in.

Most ring grooves in pistons when they become worn become tapered or wavy. The maximum figures are the clearance at the outside of the groove and the minimum figures are the clearance at the bottom of the groove. Ring grooves which are visibly wavy or distorted should not be used or ring breakage will result. Ring grooves should be examined carefully for small nicks or burrs which will cause a local tight condition probably resulting in ring sticking. In any case where the ring clearance exceeds the maximum permitted the piston should be replaced or the grooves widened to take the next larger standard width ring.

RECOMMENDED PRESS FIT FOR VALVE SEAT INSERTS

	Depth of Insert								
	1/4 - 3/8			3/8 - 9/16			9/16 - 11/16		
O. D. of Seat Insert	Max.	Min.	Desired	Max.	Min.	Desired	Max.	Min.	Desired
1 - 2 in.	.005	.003	.004	.....	.....	.....	.....	.....	.....
2 - 3 in.	.....	.....	.....	.006	.004	.005	.....	.....	.....
3 - 4 in.	.....	.....	.....	.....	.....	.....	.007	.005	.006

VALVE SPRINGS

Valve springs should be replaced if they fall 10 per cent below original specified rating or show any signs of corrosion.

TABLE 2—AMERICAN HAMMERED PISTON RING

Recommended Piston Ring Clearances

Note: In many cases engine manufacturers specifications will vary from those given below and these specifications should be followed where available. In the absence of the engine manufacturers' specifications the following specifications will prove of value

END CLEARANCE 90 DEG. STRAIGHT CUT JOINT

Ring Diameter	Recommended		Serviceable	
	Minimum	Maximum	Minimum	Maximum
2 1/16–3 3/64 in.	.010 in.	.020 in.	.010 in.	.040 in.
3 1/16–4 3/64 in.	.015 in.	.025 in.	.013 in.	.045 in.
4 1/16–5 3/64 in.	.020 in.	.030 in.	.016 in.	.050 in.
5 1/16–6 3/64 in.	.020 in.	.030 in.	.019 in.	.050 in.

Piston ring end clearance should always be measured at the smallest part of the cylinder bore, usually at the bottom of the cylinder below the ring travel. If ring clearance is in excess of the maximum serviceable clearance a ring .010 in. larger in diameter should be used and the end clearance adjusted.

BACK CLEARANCE
(Clearance Behind the Ring in the Groove)

Ring Diameter	Minimum Clearance
2 1/16–3 3/64 in.	.012 in.
3 1/16–4 3/64 in.	.012 in.
4 1/16–5 3/64 in.	.015 in.
5 1/16–6 3/64 in.	.019 in.

In the case of back clearance only a minimum clearance has been specified as in internal combustion engines larger clearances will have no effect on ring performance. Care must be taken, however, to install a thick wall Compression ring where the piston was designed for this type of ring.

We do not recommend placing the piston rings in an engine after they have been used because the cylinder contacting surface of piston rings is made in such a way that quick seating will result. If used rings are installed in the engine they will be extremely slow in seating and there is a likelihood that they will never seat in properly. Dynamometer engine tests have shown that very seldom are rings more than 50 per cent efficient when they are reinstalled in a cylinder after having been used.

TABLE 3—THOMPSON VALVES

CLEARANCE BETWEEN
VALVE STEM AND VALVE GUIDE

Nominal Valve Stem Diameter	Clearance	
	Intake	Exhaust
5/16 in.	.001 - .003	.002 - .004
11/32 in.	.0015 - .0035	.0025 - .0045
3/8 in.	.002 - .004	.003 - .005
7/16 in.	.0025 - .0045	.0035 - .0055
1/2 in.	.003 - .005	.004 - .006

Guides should be replaced when worn to the extent that a new valve in the guide has .010 side play at the head.
NOTE: Above clearances may be varied slightly to suit individual conditions of lubrication and cooling.

circle. You expect the vehicle producer to tell you what to do; he can't make safe predictions until he has learned through his field organization just what your practice has been.

But the more this relationship is appreciated, the quicker will the problem be resolved to the benefit of all concerned.

This present discussion is based upon a broad survey of the industry. Because the vehicle manufacturers are not yet ready with their studies, we can't offer a complete answer. Suffice it to say that some of the leading producers of motor vehicles are working on the problem and may have the answers in the not too distant future, we hope. In all justice it may be said that were it not for the demands of the war many suppliers would have had the story before now. It is unnecessary to point out that the major facilities of truck producers have been employed on military vehicles. Moreover, it is a fact that on

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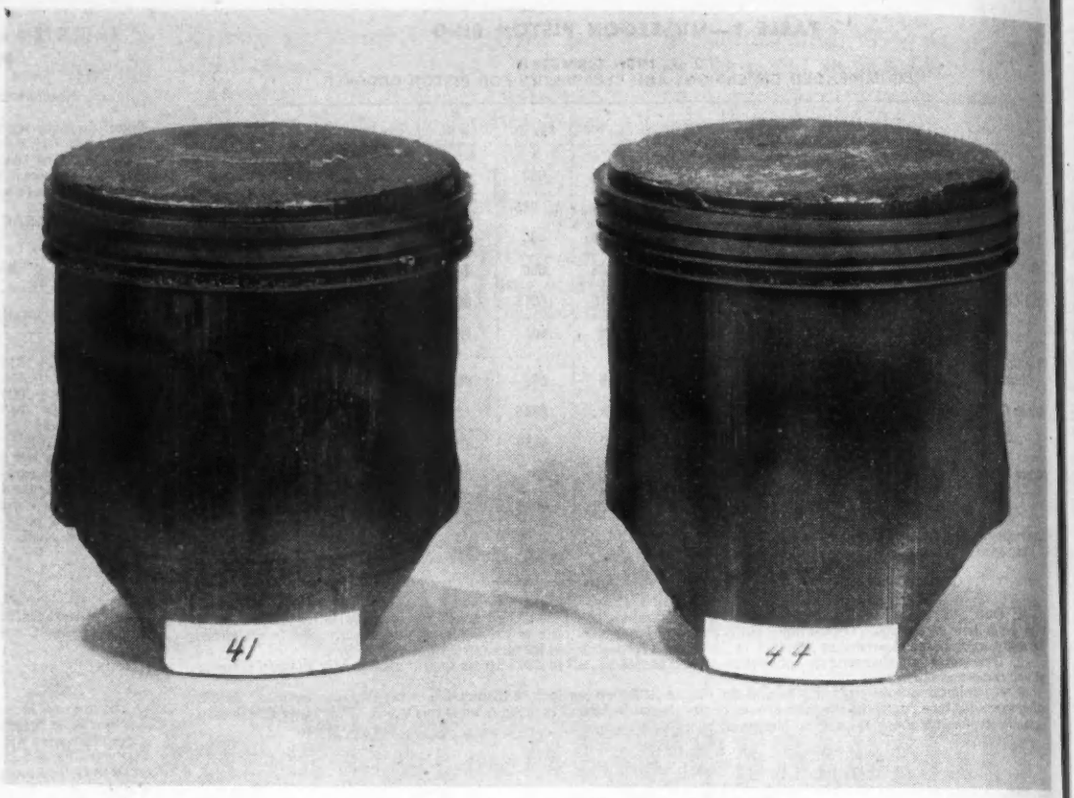


Fig. 1. Two pistons from light engines in city delivery service where contaminations was encountered. Piston at left typifies operation with straight mineral oil. Oil ring fouling prevailed and piston skirts were coated. Piston at right typifies engines using heavy-duty oil proving detergent action

SOMETHING TO REMEMBER

An interesting and significant condition related to oil detergency was observed by the author during the course of road tests. It is one that fleet operators should bear in mind when using heavy-duty oil in unclean engines.

"In two instances," the author reports, "the addition of heavy-duty oil to badly fouled engines resulted in disruption of oil circulation and loss of oil pressure.

"In the case of a diesel engine lumps of sludge were carried to the pump oil screen, plugging it completely.

"In the case of a gasoline engine, although the soft sludges were dispersed in the oil, the granular 'coffee grounds' were carried to the oil screen and pump intake, causing almost complete plugging and cessation of oil flow.

"In both these experiences, it was fortunate that loss of oil pressure was noted in time that the engines could be shut down, otherwise serious engine damage would most probably have resulted."

*Excerpted from paper presented at SAE National Fuel and Lubricants Meeting.

The Cleansing Effect

Carl. W. Georgi

THE detergent and loosening action of heavy-duty oils on soft sludges and deposits involves a serious hazard if adequate precautions are not taken. The sudden loosening of considerable amounts of sludges in badly fouled engines can readily cause plugging of oil pump intakes and disruption of oil circulation. Serious engine damage can then result if the condition is not noticed soon enough. A sufficient number of such failures have occurred in the field to make this a problem which cannot be ignored.

Heavy-duty oils containing oxidation and bearing corrosion inhibitors and "detergent" additives are now widely recognized as being much superior to straight mineral oils for lubrication of engines in severe or difficult service. They have come to be known as "detergent oils."

Although heavy-duty oils do display appreciable detergent properties on engine deposits of a soft, grease-like nature and on those parts of an engine where vigorous oil circulation and washing occur, they are not effective cleansing agents for hard, adherent or baked deposits or in those engine sections where oil flow and attendant washing is limited.

Therefore, although heavy-duty oils have become popularly known as "detergent oils," a more correct description should be "dispersant oils." While no great harm results from the somewhat inaccurate name

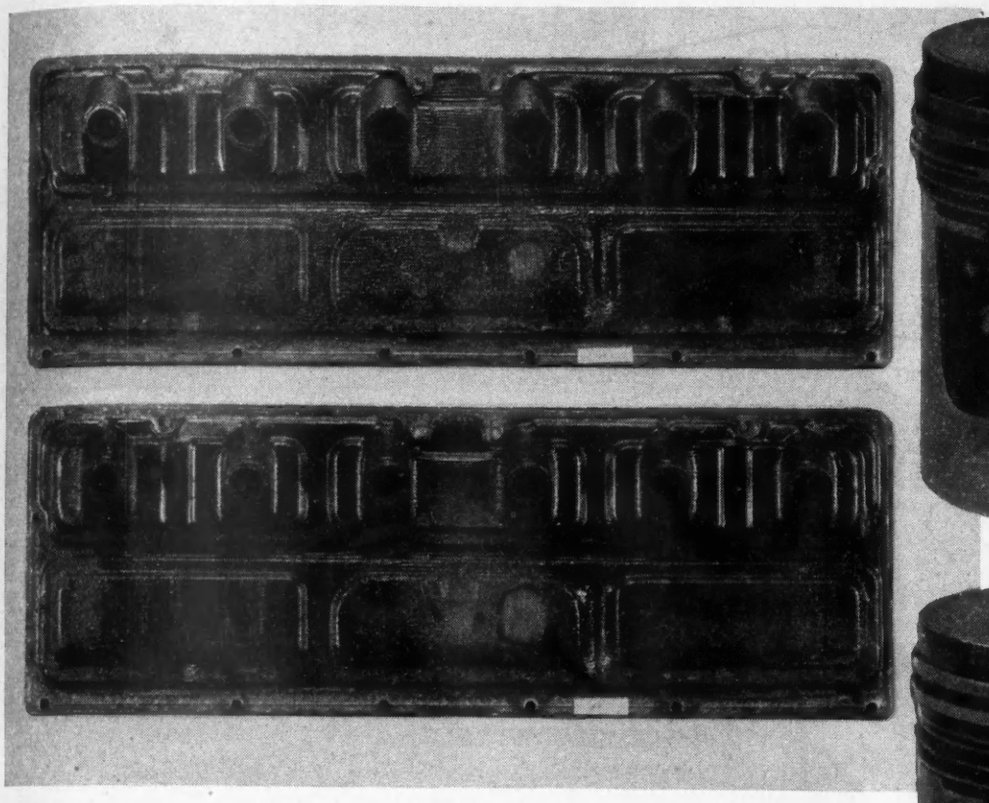


Fig. 2. Pushrod cover plates in same fleet look similar as to deposits although with the upper straight mineral oil was used and with the lower heavy-duty oil. Fig. 3. (at right) Upper piston (uncompounded oil) and lower piston (heavy-duty oil) offer evidence that heavy-duty oil's action is limited

of "Detergent Oil"

Is limited to soft, pasty engine deposits; hard, adherent deposits not appreciably benefited, tests reveal

by Carl W. Georgi*

*Technical Director, Research Laboratories, Quaker State Oil Refining Corp.

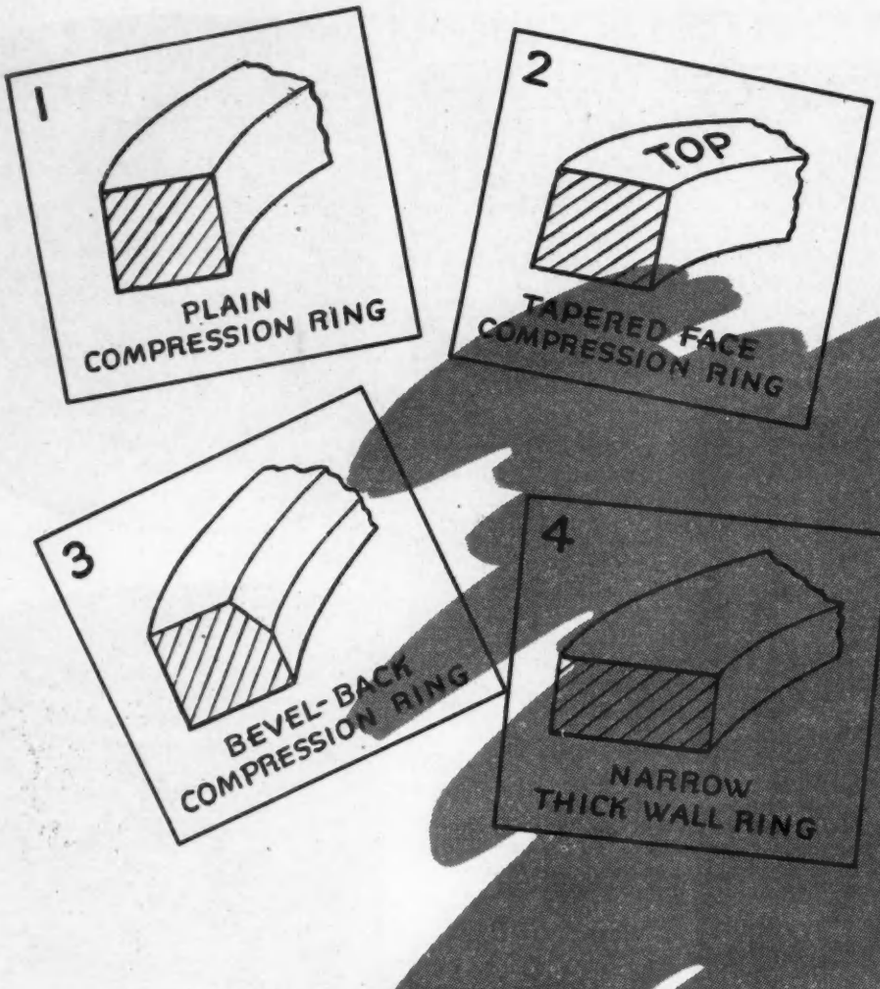
of "detergent oils," it does seem desirable to emphasize that the essential function of heavy-duty oils is to keep clean engines in clean condition for maximum periods of operation.

Since the only thorough and safe means of cleaning a badly fouled engine is by disassembly and overhaul, it likewise seems desirable to empha-

(TURN TO PAGE 88, PLEASE)

Coming: Specialized "Prescription" Lubes

"The lubricants of the years ahead will be carefully formulated and highly specialized. While undoubtedly there will still be important techniques developed in the field of refining, much of the load will be borne by specialized addition agents. Those which we now rely upon as highly effective will be improved greatly. This will be the result of research whose methods will be vastly improved, if not distinctly changed. The ability to 'prescribe' additives for a lubricant will undoubtedly be achieved."—W. Andrew Wright, Development Engineer, Sun Oil Co., in paper delivered at SAE National Fuel and Lubricants Meeting.



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THE RIGHT RING IS THE ANSWER

The use of the proper type of piston ring will not only contribute to longer trouble-free engine performance but will correct many troublesome engine problems—that is the principal theme of this article. In it the author discusses the new piston ring deve

★ ★

Piston Rings for Particular

An engineer summarizes recent developments in rings and applies them to control of piston rocking, high oil consumption, blowby and compression pressure

by Melvin W. Marien

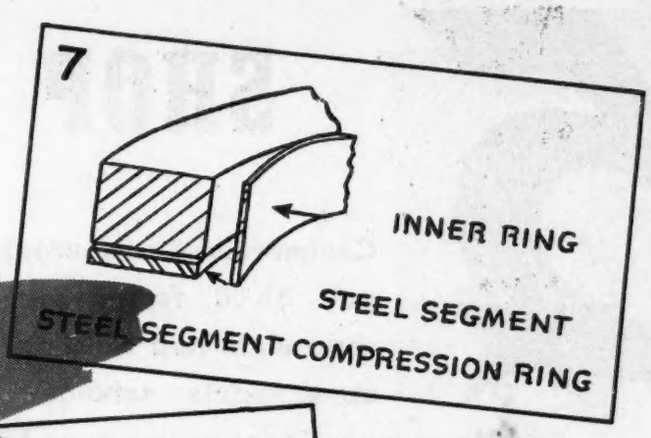
Assistant Chief Engineer, Ramsey Accessories Mfg. Corp., St. Louis, Mo.

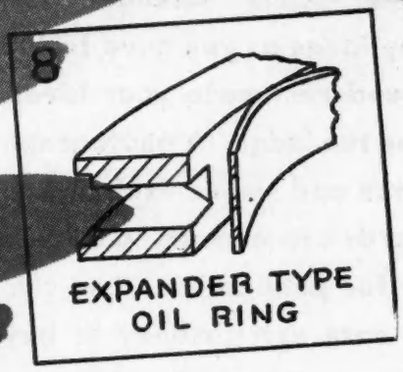
I WOULD like to mention some of the problems which can be classified as piston ring problems and show how modern piston ring developments can be applied to solve them.

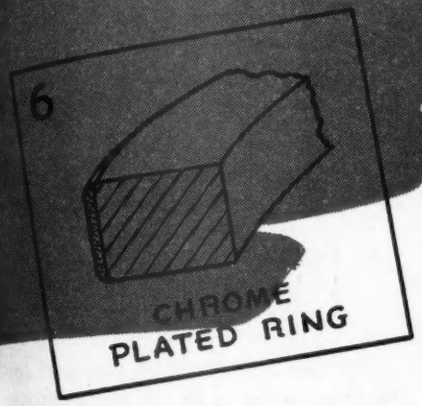
The control of blowby and compression pressure has always been an important problem because it not only has an effect on the power output of the engine but also, if it gets out of hand, cylinders, pistons and rings will wear rapidly, resulting in short engine life. The oil will become contaminated and the lubrication of other engine parts will be impaired.

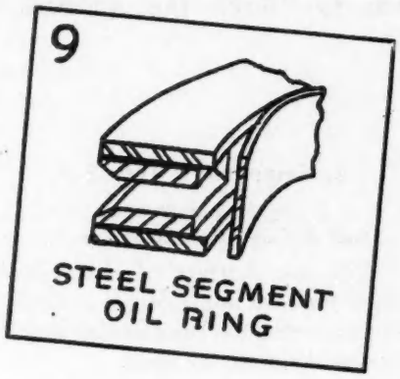
Excessive blowby and compression loss can be caused by cylinder distortion, piston distortion, insufficient lubrication and improperly machined grooves. When these factors are minimized by good engine design then modern developments in piston rings can be applied with good results. The application of thick walled, narrow compression rings in the top groove with the proper surface finish and with the added refinements of ring coatings has done much to solve this problem. This ring can be supplied with a tapered face or with the upper inside edge beveled to provide a twisting action. In extreme cases of abnormal top ring wear due to scuff-

opments and the specific problems for which they have been designed, such as improved sealing ability, control of oil consumption, sticking and blowby. He also deals with ring clearances and with finishes and coatings designed to resist corrosion, erosion and abrasion during the break-in period, as well as their influence on efficiency and performance.









Problems

ing, a chrome-plated ring can be used to advantage. Scuffing usually starts with the top ring and spreads to the lower ring and piston skirt. The scuffing or excessive wearing of the upper ring can be minimized or eliminated and then the lower compression and oil rings will not be affected. Thus, it can be seen that the top ring acts as a sort of guardian and it is of utmost importance to design this ring for the highest efficiency.

Expander type rings can be used in the lower grooves to minimize piston rocking and piston vibration thus making it easier for the top ring to maintain contact with the cylinder wall, prevent barrel-facing of the top ring and retain its efficiency longer.

Another important problem is that of high oil consumption. In modern high-speed engines it has been found that cylinder life is much longer if large quantities of oil are thrown into the cylinders from the region of the crankshaft. It is true that oil consumption can be controlled by metering the amount of oil thrown from the crankshaft. However, the best method is to have an oil throw-off much larger than actually needed for lubrication of the cylinders and then control this oil through the use of oil control rings. A greater oil throw-off also means that the quantity of oil passing through the bearings is greater providing very efficient cooling of the bearings. This is an important fact in bearing life.

In order to control generous amounts of oil, it has been found necessary to go to higher unit pressure oil control rings. The slotted and channeled ring (Fig. 8) is very effective. However, in some engines it has been found necessary to increase the unit pressure by the use of a piston ring expander. Another way of reducing the oil film on the cylinder wall to the proper thickness is to use steel segment type oil control rings (Fig. 9). This type of ring is effective in reducing the oil film at high speeds and is especially useful in engines having worn cylinders and where it is necessary or economical to avoid the expense of reboring and replacing pistons. In the construction of the steel section oil rings, steel segments are used because it is difficult to make this narrow section using cast iron. Also, the cost would be prohibitive. Steel can be used at this point in spite of its poorer wearing quality because there is an oversupply of oil. The unit pressures are not so high that they completely penetrate the oil film.

It has often been mentioned that the use of expander type rings increases the friction and lowers the efficiency of the engine. However, this is not strictly true because in order for the piston rings to function at all they must be riding on an oil film. Therefore, piston ring pressures can be increased without a proportionate increase in the friction. I might mention here that as the quantity of oil to be controlled becomes larger, the amount of power necessary to control oil also becomes larger and this power loss is sometimes represented as a friction loss. Really it is just a small cost that we must pay for a longer engine life.

Another problem that has been dis-

(TURN TO PAGE 114, PLEASE)

$5 SHOP & SALVAGE

Commercial Car Journal will pay $5.00 for acceptable shop hints and $5.00 for unusual parts salvage tips. Send in as many ideas as you have to the editor. Don't underestimate your ideas. Let the editor be the judge. A photograph or a rough sketch and simple explanation in your own words are enough. CCJ will polish them up for publication. Use this opportunity to earn extra money to buy more War Bonds to "Back the Attack."

★ ★ ★ ★ ★

Especially during these critical days, thinking men are conscious of techniques that make for efficiency and economy. Here are 10 such fleetmen who were repaid for their ingenuity.

1. Battery Strap Salvage by Frank E. Seftchick
2. Emergency Tow Bar by A. E. Peterson
3. Fifth Wheel Jig by R. M. Shelton
4. Brake Inspection Hole by Frank E. Seftchick

1. Battery Strap Salvage

by Frank E. Seftchick
Swift & Co., Brooklyn, N. Y.

We have found that battery ground straps from certain passenger cars can be salvaged for use in some trucks. The process is simple and saves new parts.

A ground strap usually becomes defective at one end or the other. We simply cut off the bad end and solder on a new split type battery terminal, as shown in the accompanying diagram.

This shortened strap will fit our 1941 Chevrolet trucks and other trucks using short battery cables.

If the old strap is corroded, any of the commercial solvents on the market will make it look like new.

2. Emergency Tow Bar

by A. E. Peterson
Gulf Refining Co., Louisville, Ky.

With the shortage of chains and ropes we have been obliged to find a substitute for towing disabled trucks broken down on the road.

A 3-in. pipe, 8 ft. long, is needed. Drill three holes about 2 in. apart in each end of the pipe and on the same plane. Then turn the pipe 90 deg. and drill in the same manner. Bend a piece of strap iron ½ x 1½ into a 6-in. loop. Two pieces are needed like this and about 28 in. long. Drill three holes to correspond with those in the pipe into each end of the strap iron. Use ⅝ x 5½, standard thread hardened bolts to fit the clamp to the pipe ends.

The bar now can be clamped to the front axle, body or the bumper of any truck. The side holes in the pipe will accommodate nearly any angle.

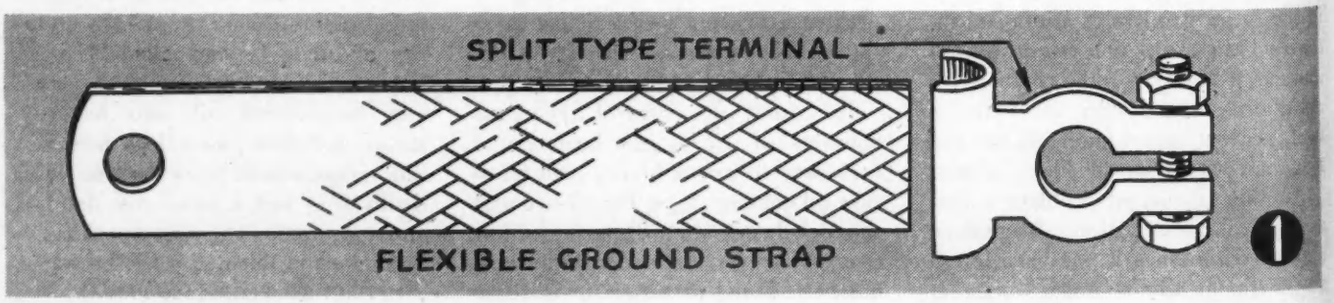
3. Fifth-Wheel Jig

by R. M. Shelton
Safety Convoy Co., Dallas, Texas

Removing and replacing the fifth wheel on a heavy truck is an awkward job, but it can be made easy with a device such as the one shown in the accompanying sketch.

To an old fifth-wheel pin, weld a metal ring. Nearly any size ring from 2 to 4 in. in diameter will do. It should be of at least ⅜-in. stock.

When removing the fifth wheel of



HINTS

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5. Grease Conservation
by R. F. Johnson

6. Fender Repair
by Gordon Upperman

7. Stud Thread Repair
by Joe Miceli

8. Brake Sanding Disk
by Budd Shaulis

9. Drill For Worn Chuck
By Joseph Magawsky

10. Light Plug Handle
by L. E. States

★ ★

the truck, simply set the jig in the wheel, look it in place, hook the chain hoist into the ring, and lift.

We have found that this procedure saves lots of time and is much safer to work with than other methods.

4. Brake Inspection Hole

by Frank E. Seftchick
Swift & Co., Brooklyn, N. Y.

Since peep holes in brake drums and brake backing plates have been eliminated on some trucks, it is impossible for a mechanic to determine whether a brake lining is worn without taking off the wheel. While the removal of a front wheel is not a difficult job, removing the rear ones takes some time.

To simplify the checking of brake linings on our trucks, we drill a peep hole ¼ x ½ in. in the backing plates at the points of greatest wear on the brake shoes. This is done when the wheel is off. To keep water and dirt out we cover peep hole with permatex. Metal covers can be made if preferred.

5. Grease Conservation

by R. F. Johnson
Los Angeles Times, Los Angeles

On our GMC trucks with four speed transmissions it is necessary to drain the transmission when removing them, because the grease leaks out the two lower cap screw holes where the transmission case is mounted to the bell housing.

We have found that studs turned into these two lower holes work just as well as cap screws. Now the transmission oil cannot leak out, for it is necessary only to remove the nuts on the studs when working on the clutch.

6. Fender Repair

by Gordon Upperman
Garage Superintendent, Continental Baking Co., Wheeling, W. Va.

All fenders have a tendency to crack in time. We have saved many a fender from the scrap heap by a simple operation which I should like to pass on to fleetmen. We have repaired many of our fenders, both before and after they develop cracks or rusted sections, with a new type reenforcement.

We cut a piece of 16- or 20-gage
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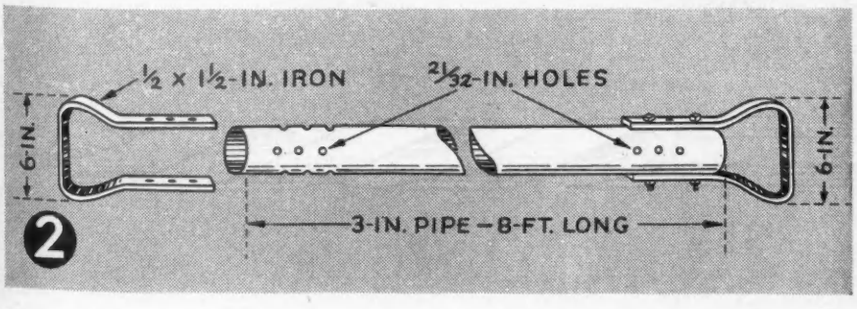
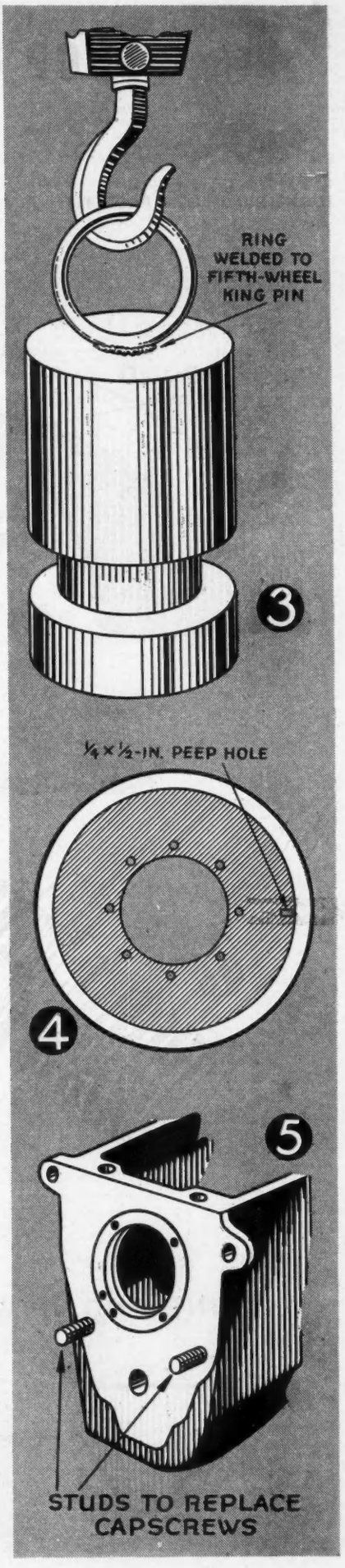


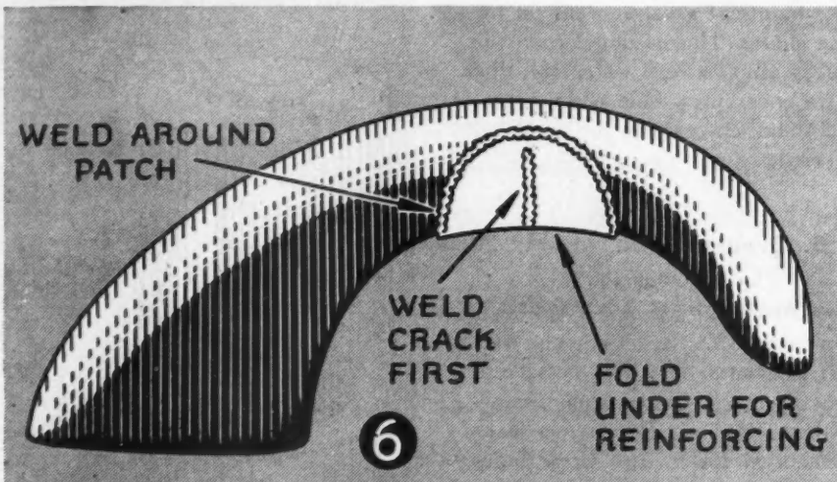


$5 SHOP & SALVAGE HINTS

(CONTINUED FROM PAGE 45)

steel to fit the contour of the fender, where the crack is or where one might occur. One edge of the piece forms a semi-circle and the other protrudes over the edge so that it may be wrapped around underneath the fender. We weld the crack and all around the steel plate. The edge can be worked down with dollies until it is practically unnoticeable.

We patch fenders in this fashion, inspect them frequently, and, consequently, have few new ones to buy.

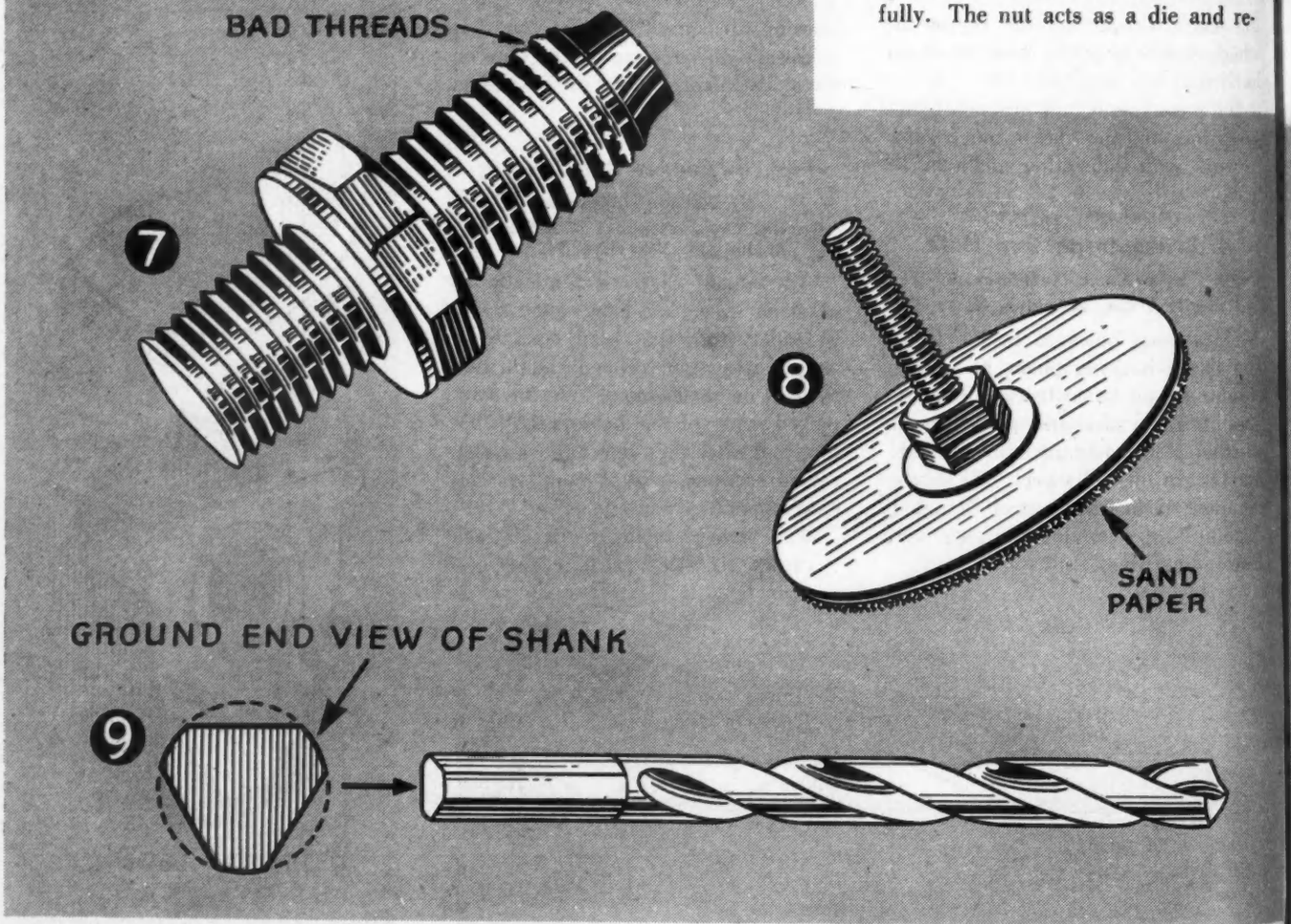


7. Stud Thread Repair

by Joe Miceli
P. & W. Bus Co., Weirton, W. Va.

We have had trouble with stripped threads on the wheel studs of our smaller trucks equipped with disk wheels. There is not enough room for the use of a die. With this device described below, we find it unnecessary to pull the wheel to repair stud threads or replace them.

Cut through one side of a ¾ SAE castellated nut and turn it down on the stud well past the damaged threads. Fit a 15/16 socket to the split nut and turn the nut off carefully. The nut acts as a die and re-



grooves the threads as it is turned off the stud.

This is not a cure-all for this type of damage. Of course, the stud should be replaced eventually if the threads are worn down much.

8. Brake Sanding Disk

by Budd Shaulis
Continental Baking Co., Norristown, Pa.

When doing brake jobs on Fords, especially 1937 and 1938 models, we find it is good practice to smooth out the ridge in the backing plates against which the brake shoe shoe rubs, when the brakes are applied. There are six of these grooves on each backing plate. We have made a small disk especially for this work and find it works very well.

We took a large washer, one used on top of the V8 front engine mounting, and cut an old sanding disk to the same size. We drilled a ¼-in. hole in the sanding disk. Then we inserted ¼ x 1-in., flat-headed stove bolts through the sanding disk and washer, and fastened them together with a lock washer and nut.

When inserted in a ¼-in. drill, this makes a fine sander for the backing plates. We even use it in body work for hard-to-reach places.

9. Drill For Worn Chuck

by Joseph Magawsky
Modern Sanitary Dairy, Hazleton, Pa.

I have a ½-in. electric drill with a badly worn chuck. I have been waiting for a new one since Aug. 8. Inasmuch as I need my drill daily, I made an emergency alteration of the drill shank. The result is very satisfactory.

The process consisted of grinding three equal flat surfaces on the drill shank so that it would fit between the three jaws of the chuck. Now the drill does not slip.

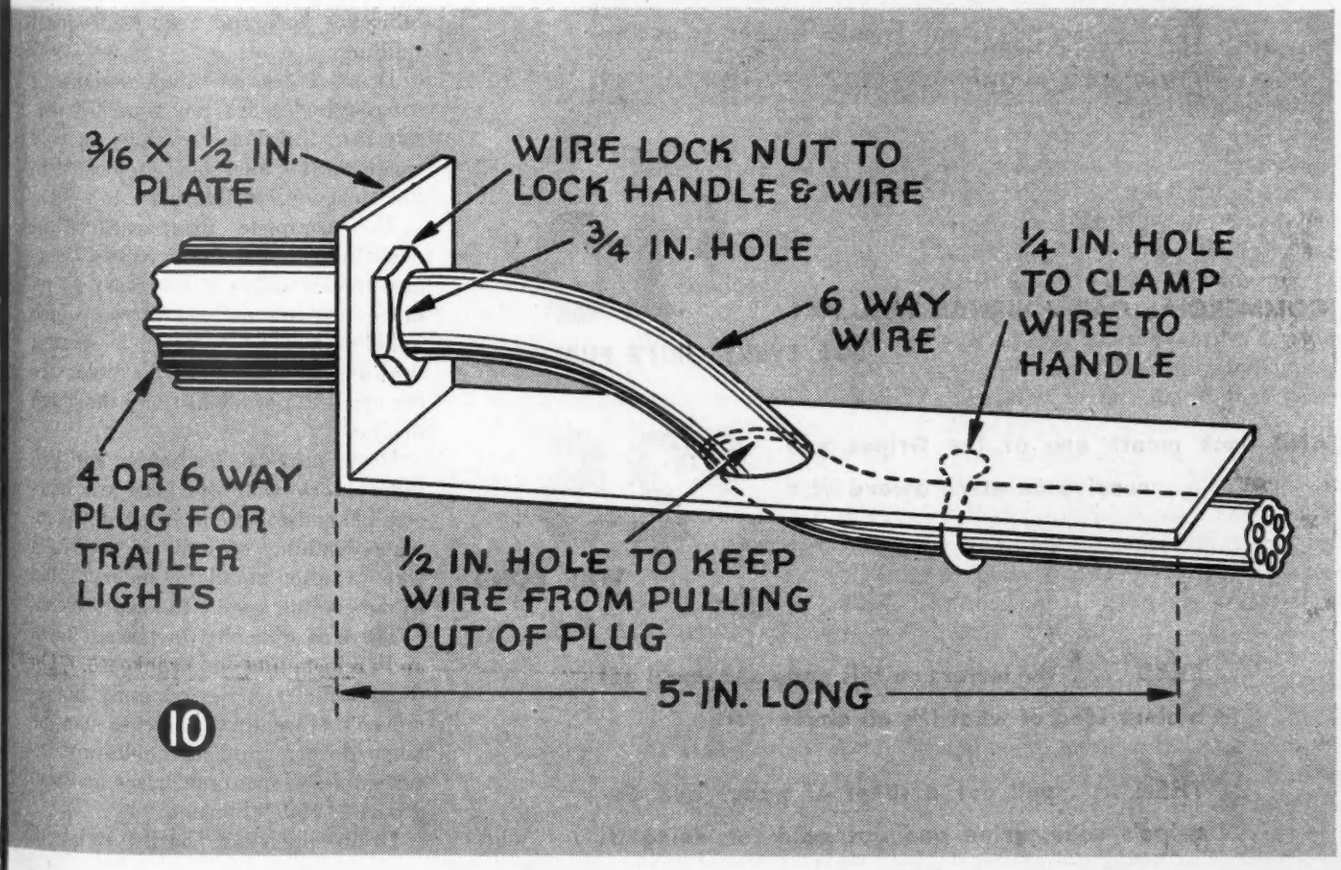
A very important factor to consider here is that of grinding the surfaces evenly so that the drill will run true. There are several methods of doing this. One way is to mark off six 60 deg. arcs on the shank's perimeter. The marks will serve as a guide in grinding. If the end of the shank is flat, one could scribe three lines on the end which would give six even sections of 60 deg. on the circumference. A micrometer could be used to measure the depth of each grind.

10. Light Plug Handle

by L. E. States
Scott Bros., Inc., Philadelphia

Among the many "nuisance repairs" we have eliminated in our shops is the damaged wire at the back of the 4- and 6-way plugs for trailer lights. This is caused by drivers grabbing the wire, instead of the plug, when disconnecting trailer lights.

Our solution to the problem was to equip every plug with a handle, as shown in the accompanying sketch. We took a piece of strap iron 3/16 x 1½ and about 6½ in. long and bent it at right angles ½ in. from one end. We drilled a ¾-in. hole in the short end, a ½-in. hole in the center of the long end, and a ¼-in. hole about an inch from the straight end. The nut was removed from the back of the plug and the plug disconnected from the light wire. The short end of the strap iron was then bolted to the back of the plug, the wire run through the center hole and connected. The wire was clamped to the handle at the third hole. Now we have a handle which will stand surprisingly rough treatment and will save many connections and hours of maintenance time.


3/16 X 1½ IN. PLATE
WIRE LOCK NUT TO LOCK HANDLE & WIRE
¾ IN. HOLE
6 WAY WIRE
¼ IN. HOLE TO CLAMP WIRE TO HANDLE
4 OR 6 WAY PLUG FOR TRAILER LIGHTS
½ IN. HOLE TO KEEP WIRE FROM PULLING OUT OF PLUG
5-IN. LONG
10

THE GRIPE DEPARTMENT

For Mechanics, Foremen, Superintendents, Supervisors—in fact all connected with the maintenance and operation of fleets, who want designers to give more thought to making post-war trucks easier to maintain and repair and less costly to run

COMMERCIAL CAR JOURNAL WILL PAY $10 FOR EVERY GRIPE PUBLISHED

AND each month one of the Gripes will receive an extra award of a $25 WAR BOND

READ . . . the letters on this page and you'll get a clear idea of what it's all about . . .

THEN . . . pull out a sheet of paper and, for gripe's sake, gripe and get paid for doing it!

Lubrication and Brake Troubles, Inaccessibility

$10 AND $25 BOND

THE GRIPE DEPARTMENT,

DEAR SIRS:

All "Gripes" published in your COMMERCIAL CAR JOURNAL are just and real. We would like to add some of our "Gripes" not mentioned in your publication.

Proper lubrication is of vital importance to a fleet owner in the economical operation of the fleet. The manufacturers of vehicles urge that adequate and exacting lubrication be given a truck or car. Yet, in designing the vehicle, they have forgotten accessibility to lubrication fittings. Because of this, some fittings never get any lubrication. An improvement is needed in chassis lubrication fittings to permit fast and thorough lubrication.

Adding oil to the engine on some vehicles is difficult without spilling. Steering gear boxes using fluid gear lubricant leak and require frequent refilling.

Drain holes on transmissions of some vehicles are too small to permit fast draining, especially in cold weather; the filler hole is located in the most inaccessible place.

The complete disappearance of drain plugs on the rear axles of cars and trucks makes it necessary to remove two bottom cap screws which hold carrier to housing to permit draining of rear axle, the holes are too small to permit fast and thorough draining.

Drain cocks on radiators and cylinder block water jackets are inaccessible and too small to permit complete draining of scale and rust, a trap or filter could be incorporated in the cooling system to keep it clean.

There is difficulty in taking down and reinstalling a crankcase. On some vehicles a tie-rod must be removed before the crankcase can be taken down; crankcase bolts are inaccessible. Some crankcases are also a part of clutch housing.

Drain plugs are easily stripped,

"The Gripe Department" invites fleet mechanics and all others connected with fleet maintenance and fleet operation to send in their gripes. For every griping letter published in this department, COMMERCIAL CAR JOURNAL will pay $10. In addition, the best letter each month will receive a $25 War Bond. The choice of letters for publication and for the War Bond will be made by the Editors of COMMERCIAL CAR JOURNAL. Their disposition of letters will be final. Choice will be determined by the content of the letters and not by style of writing or appearance.

Here is a chance for every fleetman to tell the designers of post-war trucks what is wrong with trucks as they have been built and how post-war trucks should be designed to cut down maintenance time and maintenance costs.

Here is every fleetman's chance to get his ideas over to all of the big shots in the truck industry; presidents, sales managers, engineers and servicemen.

Here is an opportunity for fleetmen to influence post-war truck design along lines that will make their jobs easier and more pleasant.

Address your letter to THE GRIPE DEPARTMENT, COMMERCIAL CAR JOURNAL, PHILADELPHIA 39, PA.

drain holes are too small to permit the draining oil to carry off the foreign material and sludge.

The crankcase should have an inspection plate located under the oil pump screen, and large enough to permit the removal of oil screen for cleaning.

Applying crankcase gaskets to the oil pan is most difficult; shellacking and tying gaskets to pan are necessary before installing. The gaskets shift and tear during installation, causing oil leaks.

The elimination of inspection or peep holes on brake drums for checking brake lining wear necessitates the removal of wheels. Elimination of peep holes increases unnecessary maintenance for the fleet owner. Here, again, the most important aid to proper maintenance has been overlooked by the manufacturers.

Dismounting tires that are rusted to the rim is a back-breaking task. Many man hours are lost in dismounting tires. A rust-proof rim would solve rim corrosion and simplify tire dismounting.

Here's hoping the engineers who design trucks design not a beautiful streamlined piece of inaccessible hulk, but a truck that the mechanics have dreamed of, and the operators prayed for. We suggest they consult some old timers like "Griping Pete" of Gulf fleet.

FRANK E. SEFTCHICK,
Fleet Supt., Swift & Co.,
Dairy & Poultry Div.,
Brooklyn, N. Y.

$10

Speedometer Cable

THE GRIPE DEPARTMENT,
DEAR SIRS:

I enjoy your "Gripe" section very much. It is one of the most efficient means of opening the eyes of truck designers who have, to date, given very little thought toward accessibility, standard location and repeat breakage of small accessories, which are necessary to efficiently operate a truck.

For instance, a popular two-speed rear axle manufacturer produces a very sturdy and efficient two-speed rear axle. However, in order to efficiently use a two-speed rear axle, it is necessary to have the speedometer working at all times for correct records, etc. Therefore, this manufacturer supplies a kit to be used for shifting the speedometer adaptor from low to high ratio, as the rear axle is shifted. The main shift cable of this kit is made out of a piece of steel wire costing approximately 10 cents. Since very few of these wires last longer than 10,000 miles of operation, the following repairs are required each time this wire breaks:

First, replacement of the wire; second, removal of speedometer head in order to reset; replacement of same. Time actually spent in replacing a 10-cent wire often amounts to five or six dollars, in addition to time spent checking trip records to determine the correct mileage at which to set speedometer.

Therefore, why doesn't this manufacturer construct a shifting kit that would equal the performance and life of the two-speed axle produced.

JOHN L. SCRUGGS,
Pacific Motor Trucking Co.,
Eugene, Ore.

Winter Maintenance "Beefs

$10

THE GRIPE DEPARTMENT,
DEAR SIRS:

Have read your department with great interest and would like to contribute a few of our favorites. First, to keep the records straight, our fleet consists of all standard jobs; no C.O.E. or other specials where tough maintenance is the usual and expected thing, even though a lot of it could be eliminated by careful engineering.

As we plunge into the winter season, we begin to get nightmares of freeze plugs on the back of motors, under dashboards, where only a contortionist can change them; others half hidden under generator support brackets, where an hour is lost removing and replacing parts to do a job that only takes five minutes.

Packless water pumps that necessitate removing hoses, fan belts, generator brackets and shifting radiator assembly just to change a leaky unit.

Radiators that make it necessary to remove water pumps before they can be pulled for exchange, others where shell and all must be removed to change a unit.

Hoses and hose clamps that must have been put on before the fenders and shields were assembled. These and many more such aggravating instances could have been eliminated by a little practical engineering, the

(TURN TO NEXT PAGE, PLEASE)

shifting of a part or unit one or two inches, or maybe less, to clear other obstructing parts.

In the daily maintenance of our fleet of 120 cars and trucks we have come across many engineering classics that really have had us "hanging on the ropes." On one model truck we have, the engineers must have laid a gas tank on the assembly line and then built a chassis around it. A different shaped tank with the same capacity would have saved from two to three hours on replacement.

On this same model, the steering column support bracket is riveted to the frame as it is impossible to remove column assembly from this bracket for repairs, and there is no room to chisel off the rivets they must be burned off, which not only causes a time loss, but induces a fire hazard that could possibly lead to disastrous results.

It is not only the inaccessability of various units that gripes the average fleet mechanic, but also the seeming lack of common sense in the arrangement of various functional units, such as starter motors mounted near oil filler pipes. Oil drips on the starter from time to time, and then we have premature failure.

Wiring looms fastened to chassis where steering column grease, battery acid and moving parts rubbing them can cause insulation failures and subsequent fires.

Fuel pumps mounted close to a nice hot exhaust pipe with no means of cooling them or transferring heat. So we have vapor lock. Distributors mounted close to radiators, so that when it rains or snows there is a strong possibility of it shorting out. Even a radiator leak if up high enough will do the same.

These things, and many more like them, to our minds are inexcusable boners and the a continual cause of "beefing." There is no doubt that the Engineering Departments of the large truck manufacturers have contributed tremendous advantages to the industry, and to all truck owners, through their intelligent research and development work. But it is the feeling of the man in overalls that just a little more emphasis should be placed on accessibility and more horse sense used in assembling the various units.

JOHN M. KAVANAGH,
Supervisor, Hegeman Farms Corp.,
Ridgewood, N. Y.

The Gripe Department

(CONTINUED FROM PAGE 49)

Screw Head Slots Drove Him "Screwy" $10

THE GRIPE DEPARTMENT,
DEAR SIRS:

My pet "Gripe" has driven me "screwy," so I wrote you a letter and bolted to the nearest mail box.

I work for a bus transportation company and have found that on our equipment the screw and bolt heads have three to four different types of heads.

It was a simple operation with the straight slot type. Now a fellow needs a tray of assorted screw drivers, different types and sizes.

The manufacturers ought to pick out the most satisfactory head and use one standard type.

EDWARD YOUNG,
Mechanic,
The Short Line Inc. of Penna.,
West Chester, Pa.

Seat Is Sore Spot $10

THE GRIPE DEPARTMENT,
DEAR SIRS:

A pet "Gripe," and a common one of many drivers, is the seat cushion on many trucks, whose springs at times tear the drivers' clothes and, not infrequently, jab into tender spots.

The cushions, when new, are often none too comfortable.

Something ought to be done about this.

H. B. HART,
Sterrett Operating Service,
Washington, D. C.

Caution on Core Plugs

THE GRIPE DEPARTMENT,
DEAR SIRS:

After reading the "Gripes" in the October issue of the COMMERCIAL CAR JOURNAL, I would like to make a suggestion which I think would benefit many service men and save owners many dollars and man hours.

Many uninformed service men have been led to believe that "Core Plugs" in a motor block are freeze plugs and have so called them. This is wrong and should be corrected. The plugs in question are not freeze plugs and are not put there for that purpose but are core plugs and are put there to clean the sand from the block after casting. Water will freeze quite hard before these plugs are pushed out and invariably the side of the block will be pushed out also, thereby making a costly repair or a block ruined entirely.

The "Gripe" written by Mr. Fred Smith of Chattanooga prompted me to offer this suggestion.

HARRY F. REISWEBER
Supvr. of Motor Vehicles,
City of Buffalo
Dept. of Parks, Buffalo, N. Y.

Manifold Gripes $10

THE GRIPE DEPARTMENT,
DEAR SIRS:

The following is my "Gripe." I would like to see how it looks in print.

Manifolds and exhaust systems have not been outdone in the "hide and seek" engineering methods used in designing the modern cars and trucks.

The engineers have done a good job of hiding the fuel pump, water pump, distributor, condenser, starter, generator, gages, switches and wiring. They even hid the horn behind the grille. Ah—but the manifold, here is where the boys really put on the proverbial dog. Besides doing a superb job of hiding most of the bolts and nuts that hold it on, their every thought must have been, "give them more heat."

The mechanic who can change one and not twist off some part of it, cuss a blue streak or get scorched certainly deserves the nation's highest honors and decorations, including the purple heart because he is certainly going to be hurt some way before he is finished with it. The slip joint method of assembling the rest of the exhaust system almost works a mechanic into exhaustion trying to separate these joints.

If they would insert a few bolt-up

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New Angles on Accepted Safety Aids

Fresh slants on most popular methods of creating and holding driver interest in safety stress novelty and individuality

by W. Robert Smith

Manager Safety & Personnel, Scott Bros. & Pennsylvania Truck Lines, Inc., Philadelphia

W. Robert Smith*

EITHER you have inherited from earlier days, or have selected, by your program of employment and training, a driver. You know he has the ability to drive safely. But you don't know that he will. You have schooled him in the safety rules and regulations. You wish you could be sure he would comply with them. You attempted to measure his attitude to safe driving. But you wonder whether his attitude will be the same when he's at the wheel, away from supervision—in city traffic or on over-the-road runs. You may reasonably assume that his ability will be constant, but will his interest, his attitude, guide and curb that ability?

The answer can only be demonstrated by the successful termination of each tour of duty. The driver's interest in safety must be maintained by an unbroken succession of correlated safety activities. Human beings, generally, have difficulty in maintaining a steady, adequate flow of interest in almost any object or subject including safety. And by interest, I mean a fixed, constant quality of the mind; not sporadic enthusiasm but a continuing desire and determination to operate safely. Such an interest will translate the driver's ability and knowledge into safe operation.

Unfortunately, the problem can be stated more simply and easily than it can be solved. The solution requires continuous administration of a number of activities. Activities sufficient in number to affect the variety of characteristics of each driver and each group of drivers. The solution is complex because the driver is.

What is the nature of his driver? His age might range from 21 to 65, he might be either white or colored, half literate or well educated, moron or genius, tall or short, fat or slim, introvert or extrovert, married or single, enthusiastic or impassive, accident free or accident repeater. Our program should be sufficiently com-

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* Excerpted from a paper presented at the Sixth Annual Short Course for Motor Vehicle Fleet Supervisors at Pennsylvania State College, State College, Pa.

NEW TWISTS ON ONE TIME-TESTED IDEA

"BULLETIN BOARDS—Interest will be increased by the development of posters using your own vehicles and men as models.

"Tie-in material supplied by outside agencies with supplementary notices or bulletins.

"General bulletins concerning nation-wide experience at intersections with school children and pedestrians can be localized and made more effective. To illustrate: On a colorful poster depicting a jay-walker and citing the pedestrian death rate, we wrote, 'Even though pedestrians make a good target, the law provides no open season. Let's fail to hit every one of them!'

"Change the board layout at different intervals.

"Have blank days to attract attention to changes.

"Remove defaced notices and posters.

"The bulletin board is one of your safety publicity agents. Use it as skillfully as the manufacturers do to create demand for their products."

A typical convoy of vital war supplies being fed to the Western Front by the Army's "Red Ball Express"

This big convoy reached its destination safely and on time. Waiting to unload, soldiers take a needed rest

Red Ball Express Trucks Army t

The dramatic operational and maintenance details of the two one-way, all-truck highways funnelling immense quantities of war goods from French ports to Western Front

HEADQUARTERS, COMMUNICATIONS ZONE, EUROPEAN THEATER OF OPERATIONS, UNITED STATES ARMY —Four times as long as the famed Burma Road, a two-way all-truck highway network, known throughout the Communications Zone which it traverses and the Combat Zone which it supplies as the United States Army's Red Ball Express Highway, is America's "Road to Victory" on the Western Front.

Approximately 25,000 soldiers, directed by Lieut. Gen. John C. H. Lee, Commanding General of the Communications Zone, ride the Red Ball day and night, speeding ammunition, petroleum products and food to the steadily advancing fighting men at the front.

Details of the vast transportation and supply undertaking were revealed for the first time at a press conference in Paris conducted by Maj. Gen. Frank Ross, of El Paso, Tex., Chief of Transportation; Brig. Gen. Royal B. Lord, of Pawtucket, R. I., Chief of Staff; Brig. Gen. James H. Stratton, of Arlington, Va., Chief of Supply; Col. Earl E. Warren, of Kansas City, Mo., Commanding Officer of the

NO. 1 "OVER-THE-ROAD" OPERATION

"Transportation was no particular problem until the great breakthrough in the St. Lo area by Lieut. Gen. George S. Patton, Jr. Distances became greater; the burden heavier. Gen. Patton motorized his divisions overnight by mounting his Infantry on his own organic supply trucks. This move forced Communications Zone commanders to 'throw the book out the window.'

"Under the strain of the fast-moving front, the huge machine of motor transport became overheated. Convoys were racing against convoys and bucking other traffic. These conditions cooked up terrible traffic jams. Drivers fell asleep at the wheels and crashed. Convoys were diverted, split up, lost, strayed and kidnapped by units who needed vehicles and supplies.

"To keep the system from breaking down, haggard officers, working day and night like the drivers, planned a complete overhaul. The Red Ball Highway was the result."

Since releasing this report the Army has announced that rail facilities have been established between the channel ports and Paris and that the Red Ball trucks have been switched to operations East of Paris to provide a link with troops on the Western front. Trucks, therefore, continue to be a vital supply line to the Allies and a factor in Victory.

Periodic checks are made along the highway to insure safe and prompt delivery. Right, MP directs traffic

to Victory

Motor Transport Brigade operating the famed Red Ball Express and Lieut. Col. Loren A. Ayers, of Sault Ste. Marie, Mich., Chief of Motor Transportation Division, Transportation Corps, all of Headquarters, Communication Zone.

Twenty-four hours a day, columns of Quartermaster Corps trucks roll by on two major highways, one eastbound, the other westbound. In the first 26 days of operation, the Red Ball Express delivered more than 200,000 tons of supplies to the Western Front.

Setting up the network, on which only trucks marked with a brilliant red disc may travel, required the brain-work and team-work of the finest soldiers in Communications Zone —Transportation Corps men who devised the system and now supervise its operation; Quartermaster Corps soldiers who furnish most of the supplies, the trucks and the drivers; Engineers who repair the roads and bridges; Ordnance Department experts who repair the vehicles; and the Signal Corps which keeps communications in operation. Military Police give directions and keep the highway cleared of unauthorized traffic, while Medical Corps men operate aid stations along the road for treatment of the sick and injured.

Inaugurated on August 24, the Red Ball Express was born of necessity. Transportation was no particular problem until the great breakthrough in the St. Lo area by Lieut. Gen. George S. Patton, Jr. Distances became greater; the burden heavier. Gen. Patton motorized his divisions overnight by mounting his Infantry on his own organic supply trucks. This move forced Communications Zone commanders to "throw the book out the window."

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To keep the system from breaking down, haggard officers, working day and night like the drivers, planned a complete overhaul. The Red Ball

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THE EFFECTIVE REMEDY

"We used to have a lot of damage to front fenders on our tractors . . . these injuries ranged from small, but troublesome, dents, to completely smashed fenders.

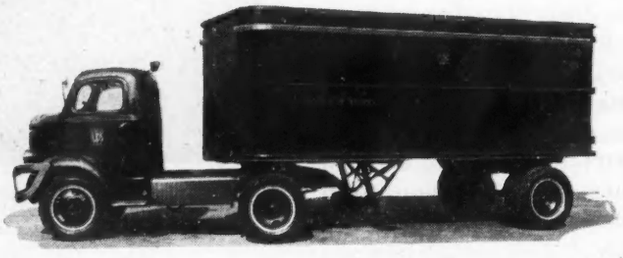
"Finally, we began to install extra fender guards. These were made of steel and fastened, on the one end, to the front bumper and, on the other end, to the fender support bracket.

"Another effective protective measure is employed to prevent damage to our trailer bodies. This, also, is a steel guard installed on the sides of the bodies, about 12 in. from the top.

"We began making these protective devices over a year ago . . . Since then, we have not had a single unit in the shop for these troublesome body and fender jobs."

United Parcel Stops Body & Fender Damage

Carl G. Nesholm



THIS organization handles all of the deliveries for 175 Chicago department stores and retail specialty shops. There are a lot of things we have had to do in order to overcome various difficult problems engendered by the wartime restrictions.

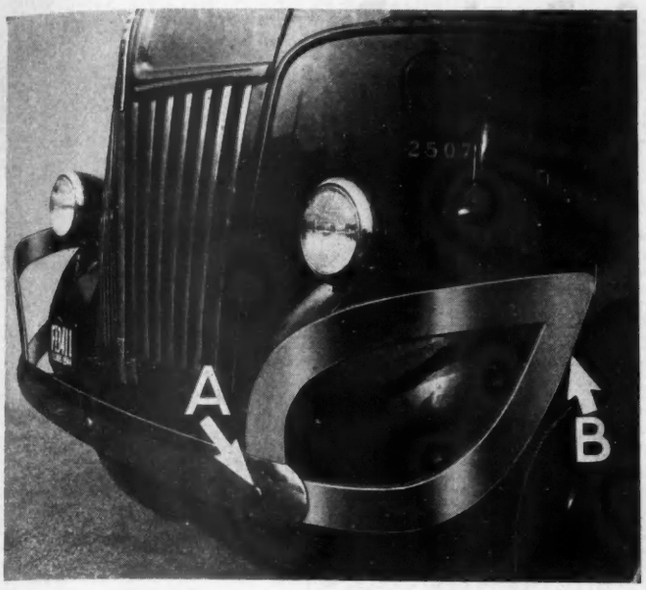
Often the things which seem trivial amount to big things in the aggregate. For example, we used to have a lot of damage to front fenders on our tractors which we use for picking up packages at large stores and substation transfers. These injuries ranged from small, but troublesome, dents to completely smashed fenders.

The situation was aggravated by the shortage of help in the maintenance shop, as so many of our boys had gone into the armed services. Yet, it was important to keep our vehicles looking good, as well as in first class mechanical condition.

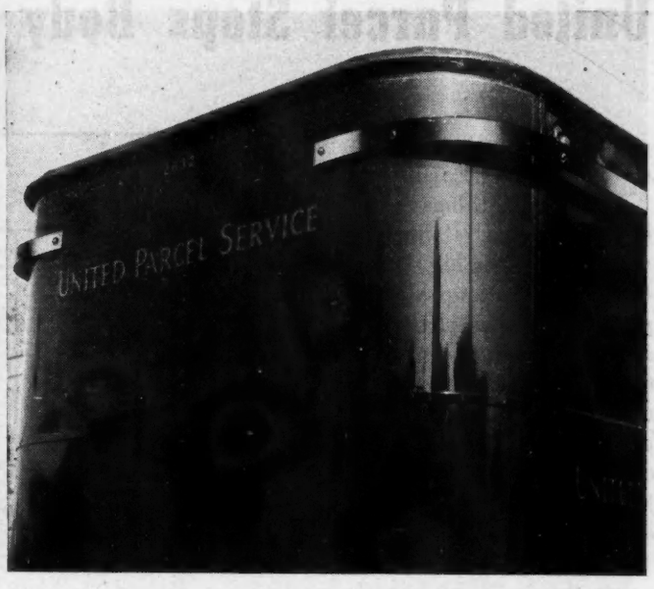
Finally, we began to install extra fender guards on all of our tractors. These were made of steel and fastened, on the one end, to the front bumper and, on the other end, to the fender support bracket. It had firm support, yet sufficient "spring" effect to absorb the shocks. They were made of steel strips 3/16 in. thick and 2½ in. wide, and curved to protect the front part of the fenders.

This simple device answered the purpose. It saved the fenders from injury, and consequent repairs, and gave mechanics more time for more essential repair work.

Another effective protective measure is employed to prevent damage to our trailer bodies. This, also, is a steel guard installed on the sides of the bodies, about 12 in. from the top.



One of two home-made guards devised and constructed by UPS to stop body and fender damage. Fender guard, above, is fastened to bumper at A and to fender bracket at B



This is the other home-made guard installed on all UPS trucks. Not only does it prevent major body damage, but even rub marks and scratches now are uncommon

Simple, home-made body and fender guards solve costly and troublesome body and fender jobs. Labor relations policy and effective PM control smooth wartime maintenance

by Carl G. Nesholm

Fleet Superintendent, United Parcel Service, Chicago

These units necessarily get into tight places, often squeezed into such close quarters that without this protection, paint is scraped off the sides, denting the metal or even punching gashing holes all the way through.

These guards are made of the same material as the fender bumpers. We mount them on oak blocks, which are 2 in. thick, to hold the metal railing that far away from the sides of the body. The bars are fastened to the ribs of the trailer body over the oak blocks, which are soft enough so that an *excessive* jar causes the wood block to split or shear off but does not allow body ribs to be "caved" in, as they would if the railing were fastened on more securely.

The few rub marks on various bodies show the method has helped prevent costly damages. The cost is moderate. For example, the body bars cost us $2.45 each for 22 ft. lengths, or $4.90 for both sides of a 22 ft. trailer, and the labor involved is about 8 hours.

We began making these protective devices over a year ago. While we have not kept a complete record, owing to the help shortage, I can say this: Since the installations, we have not had a single unit in the shop for these troublesome body and fender jobs.

On some of our smaller package cars, we installed small auxiliary bumpers on the back, to prevent rear-end damages to the bodies. All of these additions which were war-born, will serve us with equal economy in the future.

Labor Relations Policy

The company's national policy of personnel relationship has proved of more than usual value since the wartime labor conditions became acute. The encouraging factor of our policy is that it is so simple. It is based on courtesy, understanding of each others' characteristics, mutual needs and cooperation. For example, we never scold drivers or other workers on the force. If mistakes occur, and they do, we try to sympathize with the employee and say to him that we know it is a difficult operation, and ask him to be more cautious next time. He will try to do a better job. It has helped us to do a better maintenance job on our fleet, to cut down accidents and damage to units and, in turn, makes it easier for the boys.

Our attitude also has helped in obtaining whole-hearted cooperation in improving maintenance methods and in inaugurating a parts salvage program. It was hard, at first, to get mechanics to salvage worn or used parts. It was much easier (and it looked like the right thing to do) to replace the old with new. We had to live with the men, so to speak, to get them to use these wartime methods. But by watching carefully, and explaining the logic of the policy, they cooperated and they have long

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United Parcel Stops Body & Fender Damage

(CONTINUED FROM PAGE 55)

recognized the necessity for doing so.

It's the little things that count most in a good labor relations policy. One of the boys has a big coffee pot in the shop. He heats up a brew on a gas plate and invites all the boys in for a drink of coffee in mid forenoon. It takes only a few minutes. If I'm in the shop, I join in. It's fun and pays dividends in loyalty and efficiency. If a workman turns out a good job, we tell him it's well done. A pat on the back makes him feel good.

The same personnel relationship policy that has kept our present shop organization intact will, we believe, result in our men, now in the armed forces, returning to their jobs here. We treat employees with respect, as we want to them to feel that their jobs are the best in the city. They get privileges, yes, but at the same time we demand good work. Most of them realize the importance of this work and they do it. When a rush mechanical job comes in, for example, the boys will stay on it and get it done so the car can return to service. This pays big dividends.

We have 16 men here in the Chicago maintenance shop. Three men in the paint shop, two body men, the stock room man, nine mechanics and a porter.

Buying Policy

We contact venders and treat them with respect—ask them questions about what other fleet operators are doing elsewhere to solve their problems. These courtesies, which also are a company policy, never paid such high dividends in maintaining our PM program. Venders know where they can get a part for this or that, so we take them into our confidence and they do their utmost to help us get what we need. We have lived up to this company policy, and, if we hadn't followed this course, we could not have done the job alone. All have cooperated splendidly.

For instance, the parts suppliers' salesmen would call on us every week personally, or by telephone. It surprised us how much valuable information we obtained from these

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UNITED PARCEL SERVICE
ANALYSIS OF ROAD CALLS
MONTH OF 194

REASON FOR CALL	CENT.	ODDEN	SOUTH	LA78.	14 & 16 PURS.	WHSE. FURN.	MISC. HAUL.	TOTAL CALLS	REMARKS
Ignition									
Tires Flat									
Battery									
Gas Tank Empty									
Axle Broken									
Carburetor									
Gas Line									
Oil Line									
Fuel Pump									
Gear Shift									
Transmission									
Driver Missing									
Brakes									
Clutch									
Water Pump									
Keys Lost									
Radiator Leak									
Differential									
Accident									
Engine Bearings									
Fan Belt									
Fan Broken									
Starter									
Foot Throttle									
Door Locks									
Wheel Studs									
Radiator Empty									
Spring Broken									
Loose Tappets									
Stuck In Mud Or Snow									
Engine Flooded									
Timing Gears									
Valve Trouble									
Wheel Spindle									
Total Calls									
Mechanics' Hours									
Dr. Lays For Call									
Avg. Hours For Call									

Fl-Ch.-9/44

UNITED PARCEL SERVICE
PREVENTIVE MAINTENANCE WORK CARD

Division ____ Shop ____ Date ____ Odometer ____ Miles Run since Last Inspection ____ Car No. ____

(✓) Item in G. K. (O) Adjustment Made (X) Repairs Needed

ENGINE
- 1. Tighten Cyl. Head & Base Nuts
- 2. Test Compression 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____ 7 ____ 8 ____
- 3. Check & Adjust Valve Clearances
- 4. Clean & Space Spark Plugs to Proper Gap
- 5. Oil Fan Bs. Adjust Fan Belt. Check Winter Front
- 6. Clean & Adjust Distributor. Check Timing
- 7. Remove Magneto, Clean & Adjust, Test Spark & Replace
- 8. Check Generator—OIL
- 9. Check Starting Motor & Drive—OIL
- 10. Tighten Intake & Exhaust Manifolds
- 11. Check Carburetor, Governor & Vacuum Tank—Clean All Strainers, Air Filters, etc
- 12. Check Operation of Dash Instruments
- 13. Check Fuel Pump, Strainers, Lines & Tank
- 14. Tighten Engine Mounting, Bell Housing, Oil Pan & Splash Pan Bolts
- 15. Check Engine Lubrication, Clean Oil Filter Drain & Refill Crankcase if necessary
- 16. Check Clutch & Clutch Pedal Clearance
- Check Registration Serial No. and Engine No

COOLING SYSTEM
- 17. Fill Radiator & Test for Leaks
- 18. Inspect & Tighten all Hose Connections
- 19. Check & Adjust Water Pump Packings
- 20. Tighten Radiator Tie-rods & Supports
- 21. Check Hood, Hood Catches & Hood Lacing

FRONT END & STEERING
- 22. Test Play in Knuckles & Wheel Bearings
- 23. Inspect & Tighten Steering Arms
- 24. Adjust Tie-rod & Drag Link (Check front wheels rubbing drag link)
- 25. Inspect Wheels for Correct Alignment. (Inflate Tires to Right Pressure)
- 26. Inspect Front Springs, Shackles, Pins, Locks
- 27. Tighten Front Spring "U" Bolts-Apply Penetrating Oil
- 28. Tighten Steering Housing & Column Support
- 29. Tighten Pitman Arm & Adjust Play in the Steering Post

DRIVESHAFT & REAR END
- 30. Inspect & Tighten Universal Joint Flanges & Driveshaft Center Bearing
- 31. Check Rear End for Backlash & Dif. Cover Bolts
- 32. Tighten Rear Axle Nuts & Check Wheel Bearings
- 33. Tighten Radius Rods
- 34. Inspect Rear Springs, Shackles, Pins, Locks
- 35. Tighten Rear Spring "U" Bolts-Apply Penetrating Oil

TRANSMISSION
- 36. Inspect for Leaks
- 37. Tighten Supports & Adjust Shifters

WHEELS & BRAKES
- 38. Tighten All Rim Lugs & Inspect Tires
- 39. Check Brake Linkage & Oil All Connections
- 40. Check Hydraulic Brake System & Fill the Master Cylinder
- 41. Check Brake Lining & ADJUST BRAKES

GENERAL
- 42. Fill Battery, Clean & Tighten Connections ____ Hydrometer Reading
- 43. Check Lights, Horn, Signals, W/S Wiper
- 44. Check & Fill Flares. Check Flare Locks
- Check all I.C.C. Requirements
- 45. Grease Vehicle Completely

BODY
- 46. Check Frame & Brackets. Tighten Body Bolts & Bumpers
- 47. Check Doors, Endgates, Windows & Lifts. OIL all Locks & Hinges. (Chains, straps, Door Stops, etc. OK?)
- 48. Check Panels, Roof & Curtains
- 49. Inspect & Tighten Body Parts, Hardware & LICENSE PLATES

ROAD TEST (after above work is completed)
- 50. Test Gear Shifting Mechanism in all Speeds
- 51. Test Clutch Action & Observe any unusual noise
- 52. Observe Engine for any unusual noise
- 53. Check Transmission for any unusual noise
- 54. Check Driveshafts & Driving Axles for any unusual noise
- 55. Check Steering for Shimmy, Wander, Tramp, etc.
- 56. Check Speedometer or Odometer
- 57. Check Brakes for Stopping

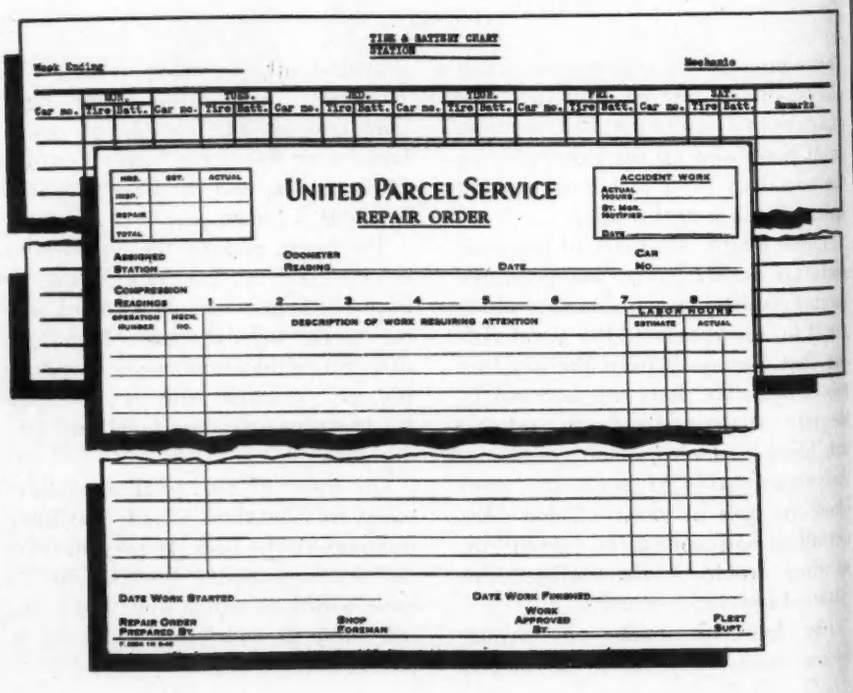
NOTE: *All Items Marked "X" Will Be Entered on the Reverse Side with Complete Explanation.*

Inspector ____ Approved ____ Div. Maint. Mgr. ____

Names of Mechanics ____ Time Required ____ Hours ____ Minutes

The completed inspection sheet will be sent to the station mechanic who will record on the reverse side all running repairs, part replacements, etc. as they occur. When the car is next in for its next scheduled inspection, the station mechanic will forward this sheet to the Division Shop.

UPS Management attribute much of the successful maintenance results to these forms. Other forms are shown on page 80



TIRE & BATTERY CHART
DIVISION
Week Ending ____ Mechanic ____

MON. Car no.	Tire	Batt.	TUES. Car no.	Tire	Batt.	WED. Car no.	Tire	Batt.	THUR. Car no.	Tire	Batt.	FRI. Car no.	Tire	Batt.	SAT. Car no.	Tire	Batt.	Remarks

UNITED PARCEL SERVICE
REPAIR ORDER

	HRS.	EST.	ACTUAL
INSP.			
REPAIR			
TOTAL			

ACCIDENT WORK
ACTUAL HOURS ____
DT. MECH. REPAIRED ____
DATE ____

ASSIGNED STATION ____ ODOMETER READING ____ DATE ____ CAR NO. ____

COMPRESSION READINGS 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____ 7 ____ 8 ____

OPERATION NUMBER	MECH. NO.	DESCRIPTION OF WORK REQUIRING ATTENTION	LABOR HOURS ESTIMATE	LABOR HOURS ACTUAL

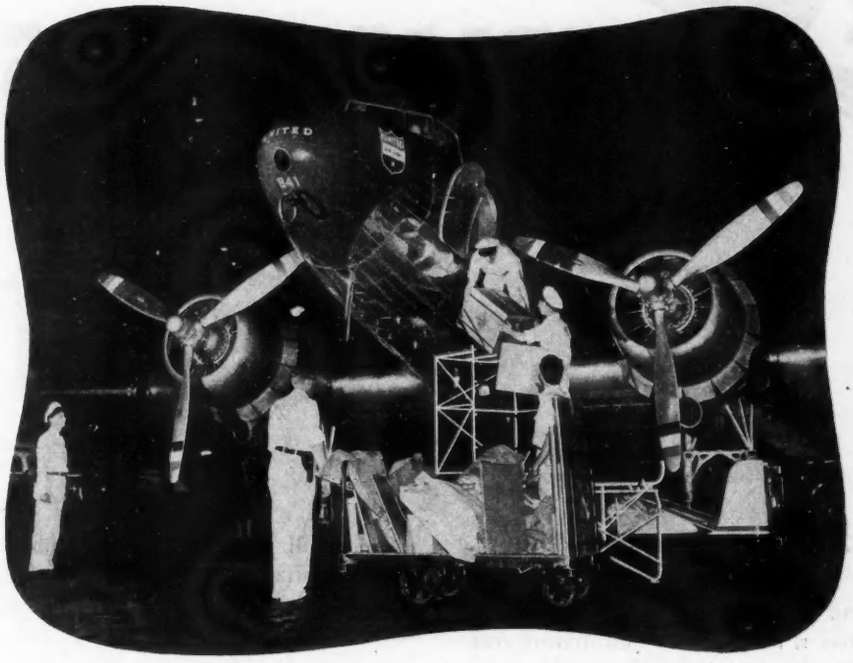
DATE WORK STARTED ____ DATE WORK FINISHED ____

REPAIR ORDER PREPARED BY ____ SHOP FOREMAN ____ WORK APPROVED BY ____ FLEET SUPT. ____

Airline official calls for help in cutting time losses on surface and scoffs at slow-plane competition with trucks

Air Cargo Counts on Ground Carrier Cooperation

R. D. Kelly



by R. D. KELLY

Superintendent of Development, United Air Lines, Inc.

THE Principal justification for air transportation, whether for passengers or cargo, is its speed advantage over ground transportation. Yet every flight starts from and ends up on the ground. Generally speaking, all air transportation must be supplemented with ground transportation, and thereby becomes an integral part of the overall distance and time equation. This is true, even with the air pickup and delivery system currently being discussed, because the cargo must be gathered up and placed at the pickup point, and later must be distributed from the air delivery point.

Aircraft manufacturers now well recognize the importance of expending engineering effort on every item which will reduce ground time. This includes aircraft manufacturers and the designers and builders of air cargo handling equipment and aircraft servicing equipment. The airlines have long been studying this problem in an effort to improve methods of handling cargo, passengers and of servicing. Much progress has been achieved, but the air transport operators can only go so far in their efforts. The success of the air transport system depends upon the overall speed made good—from producer to consumer.

Therefore, this paper is directed primarily to the attention of the ground carriers. Ground pickup, handling and distribution and delivery, is of just as much concern to the airline operator as are his own operations. Every five minutes' delay on the part of a ground carrier is just as costly to the overall air cargo operation as is any five minute delay after the air carrier takes over.

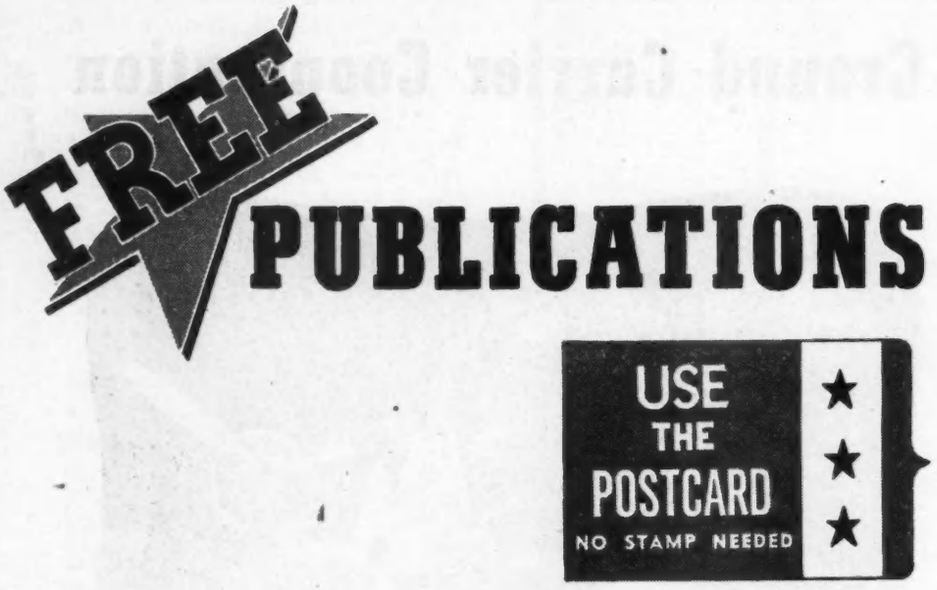
The tempo of any transportation system should be predicated on the fastest medium. It is not implied that ground vehicles should travel as fast as the airplane, because obviously, they cannot. If they could, with safety, then there would be no advantage in using the airplane at all, except for some distance saving. What is meant, is that every possible moment, from initial pickup at the producer's door to the ultimate consumer, should be utilized in *movement* toward the objective; this movement being as rapid as possible, consistent with safety, accuracy, efficiency and economy.

Because high speed transportation delays are more costly (Charts 1 and 2), it is obvious that economy in the handling of air cargo calls for more elaborate time saving devices. Much more thought and effort is justified for ground handling of air cargo, than for cargo that is to be trans-

(Turn to Page 108, Please)

VALUABLE AIDS FOR FLEETMEN

A selected list of the latest literature — books, pamphlets and catalogs — intended to help fleet operators solve maintenance and operating problems. They are more valuable today than ever before. All are free. To get your copies simply fill in the numbers on the postcard and mail. No stamp is needed.



L214. Driving Care Booklet

In these critical times, when tires and trucks are practically irreplaceable, it is necessary that drivers realize their responsibility in keeping their vehicles on the road. "Trucking To Victory" is a new 12-page, pocket-size cartoon style booklet published by a well-known surety company for the benefit of the truck driver. The publication stresses the point that very few civilian trucks were produced each year since Pearl Harbor, compared with the prewar production of one million annually.

The following vital suggestions are offered for keeping trucks in service: reasonable speed, proper care of tires, proper loading, frequent and thorough inspections, proper braking, intelligent lubrication and cooperation with other drivers. Each hint is presented as a driver must in the interest of truck maintenance and conservation. The whole represents an effort to advance motor vehicle conservation efforts.

The various points outlined are brief but well presented and should make a lasting impression on the driver. Fill in 214, and the number of copies that can be used effectively, on the free postcard and your request will receive prompt attention.

L215. Engine Rebuilding Book

A new 14-page illustrated booklet, packed with vital informtion on mass engine rebuilding procedures has been published that will aid those considering extensive automotive rebuilding.

The booklet outlines methods of mass production processing; new chemical methods of removing grease, oil, carbon, paint, rust; reclaiming carburetors, fuel pumps, and accessories as well as major engine units. Beginning with methods of disassembly, the booklet details in logical order the various steps in engine rebuilding by production line methods. Typical plant layouts are suggested, and engineering data are provided.

While the theme of the text centers around mass rebuilding, the publication offers hints and suggestions valuable to the fleet operator and mechanic reprocessing engines on a smaller scale. The fundamental operations of reclaiming parts would lend themselves to successful use in every type of engine overhaul, large or small. Any fleet maintenance superintendent, looking for a new idea in respect to engine rebuilding should find it worth while to mail the free postcard requesting L215.

L216. Female Employment Book

Fleet operators who are now employing women, or contemplate doing so in the future, will be interested in a new 18-page publication entitled "Practical Hints To Employers Of Women With Special Reference To Transportation." Prepared by personnel of the supply section of a government division of wartime transportation, the pamphlet is a compilation of the experience of a large number of transportation companies that have employed women on a considerable scale to solve wartime manpower problems.

The chapters deal with problems in recruitment, selection, placement, training and supervision. One section is devoted to practical, management hints for supervisors of women workers. Finally, frank comments of employers of women in various phases of the transportation industry are given for the benefit of other fleet operaors.

A copy of this informative publication will be sent to anyone who writes L216 on the accompanying postcard.

L217. Tire Conservation Manual

Many new ideas on the factors affecting tire mileage are to be found in a new book published by a leading tire manufacturer company. Several publications have been centered around this topic, yet this version promises some new slants that will clinch important points.

Entitled, "Vehicle Factors Affecting Tire Mileage," the manual covers such subjects as front-end alignment, toe-in, caster, camber, toeout, rear axle alignment, frame factors, wheel balance, brakes and fifth wheel. Tire engineers say there is hardly a part of the frame or truck undercarriage that cannot in some way affect tire performance.

Write No. L217 on the accompanying postcard and obtain these new data on tire conservation.

(TURN TO PAGE 250, PLEASE)

FOR FLEET OPERATORS

The latest in shop equipment, supplies, replacement parts and accessories developed by manufacturers for fleet operators. For more details of any product described, fill in the number on the postcard and mail. No stamp needed. Also use the postcard for additional information on any product advertised in this issue.

NEW PRODUCTS

P286. Torque Wrench

The New Britain Mfg. Co., of New Britain, Conn., has developed a new torque wrench. The torque chart furnished with each wrench not only takes care of most of the cars on the road, but gives recommendations for proper torque on dry threads or oil threads for cyinder heads, main bear-

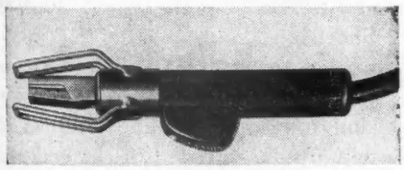
ings and manifolds. It also provides a guide for spark plugs and all of the popular truck and bus engines.

The wrench is designed for getting into close quarters. Two dials are easily read from any angle. The formed floating handle fits the hand and fixes point of load. No screws, bolts, or adjustments are necessary. As there are no glass faced dials or delicate mechanisms, it can be carried in the box with other tools. Any ½ in. drive attachment can be fitted to it and readings obtained up to 105 lb. A priority rating of AA-5 or higher is required for the purchase of the tool.

Use Free Postcard For More Details.

P287. Electrode Holder

A new holder for welding electrodes has been announced by The Lincoln Electric Co., Cleveland, Ohio. Having a current rating of 300 amperes with ample capacity for over-



load, the new holder will handle various sizes of electrodes ranging from 1/16 in. diameter to ¼ in. diameter inclusive.

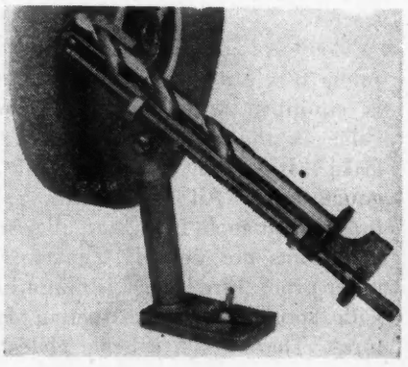
The jaws, made of high conducting and wear resisting copper alloy known as "Lincalloy," will withstand rough treatment and are fully guarded from contacting the work by durable spring steel insulating guard that is easily replaceable. The trigger of the holder is of molded, heat-resisting inorganic material.

Other features of this new type "INS" electrode holder include: hollow, air-cooled, heat-resisting fibre handle, excellent balance, and equally good performance on both AC and DC current. The design permits quick and easy change of rods.

Use Free Postcard For More Details.

P288. Twist Drill

Pictured here is the new Super, a simple jig which enables a mechanic to grind a twist drill to a factory finish in 25 seconds. The Super is mounted next to a grinding wheel and is adjustable to either 59, 69, or 88 deg. angles. It handles drills from 3/32 in. to 1 1/16 in. in diameter,

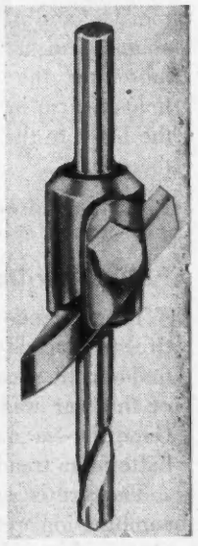


and up to 11 in. in length. The manufacturer is A. D. McBurney, 939 W. 6th St., Los Angeles, Cal.

Use Free Postcard For More Details.

P289. Adjustable Hole Cutter

A new all-purpose adjustable hole-cutting tool is announced by Bruno Tools of Beverly Hills, Cal. This unique new tool, manufactured by specialists in the field of fine cutting tools, quickly cuts smooth holes in wood, steel, brass, hard rubber, aluminum, fibre, plastics and problem materials which might necessitate use of torches or other expensive equipment. Two sizes are available,



(TURN TO NEXT PAGE, PLEASE)

NEW PRODUCTS

• CONTINUED FROM PAGE 59 •

each equipped with an easily resharpened high speed steel blade. One model cuts holes to any diameter from 5/8 in. to 1¼ in., through ⅛ in. thickness. The other model covers all expansions from 1 to 2½ in. through thicknesses up to ⅜ in. The tools are designed to operate in light drill presses, portable drills, or breast drills and are also available with square shanks for use in hand braces.

This flexibility and adjustability makes them especially valuable around the garage or shop for the quick repair or installation job, for cutting holes for instruments, tubing or pipe, wiring, etc., in panels, dashboard or floors.

The Bruno adjustable hole cutter is designed on a new principle which permits easy, yet extremely accurate adjustment. It consists of a drill which starts the hole and also serves as a pilot for the tool, a hardened body with a milled slot into which is set a specially-ground high speed steel tool bit, and a hardened and ground shank. Adjustment is obtained by loosening the hexigon bolt which holds a firm locking clip, and sliding the blade to the correct distance from the pilot.

Use Free Postcard For More Details.

P290. New-Design Tire

The first new-design passenger car tire produced and marketed by a major rubber company since the start of the war was announced by B. F. Goodrich—a mud-snow "shoe" with button-bar tread pattern.

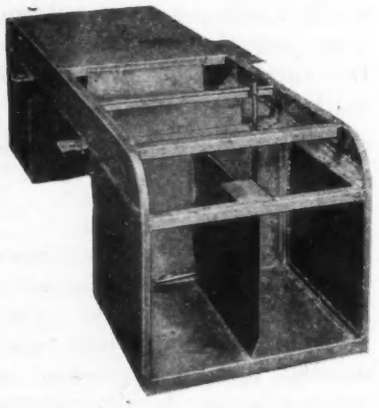
The tire is primarily designed for combination road and off-road service, and is calculated to be of special usefulness to farmers, rural mail carriers, ranchers, salesmen and utility service men. The tread has been engineered to impart maximum traction on slippery, snowbound highways and rutted, mud-clogged side roads while still rolling smoothly on hard improved highways, on either front or rear wheels.

The tire is being produced in both four- and six-ply types in the 6.00 x 16 size, in six-ply for the 6.25-6.50 x 16 size, and in four-ply for the 5.25-5.50 x 17 size.

Use Free Postcard For More Details.

P291. Saddle Tank

The Michigan Fleet Equipment Co., of Grand Rapids, Mich., has developed a new idea in gasoline tanks



for trucks and tractors. It is a saddle tank which is mounted directly in back of the cab on the frame of the tractor.

There are no soldered or lock seam joints to vibrate loose, and the tank is equipped with a special check valve in the vent to eliminate gas leaks. It is built throughout of 12 gauge steel. All corners are reinforced with angle irons, and all seams and joints are welded. The tank is pilfer proof. Fire hazard is minimized with special vent construction features. There are five baffle plates to prevent surging and also for reenforcement.

An inexpensive installation kit can be furnished to install the Michigan Saddle Tank. They are available in three sizes—100, 125 and 150 gal. capacity, although special sizes will be built to order.

Use Free Postcard For More Details.

P292. Electrode Holder

A new electrode holder, designed to allow unobstructed visibility while welding and maximum accessibility even for deep pocket work, fast loading and reloading, has been announced by the Hollup Corp., a division of the National Cylinder Gas Co. of Chicago.

One of the big wartime as well as peacetime wastes has been the too-long stub end that was regularly pulled out of the electrode holder before it was consumed in the weld area and thrown into the scrap. With the Shortstub holder, only ½ in. is needed for a tight, efficient current contact in the holder jaw. An extension of the holder itself allows the now usable stub end of the rod to be projected into the proper position for welding. The new Hollup Shortstub

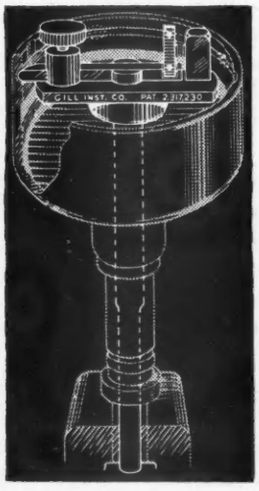
USE THE POSTCARD
BETWEEN PAGES 58 & 59
NO STAMP NEEDED

holder, completely insulated, loads and unloads in a second. Because of its balance and light weight it minimizes operator fatigue with practically complete use of valuable electrode metal.

Use Free Postcard For More Details.

P293. Distributor Tool

Satisfactory elimination of "skips" and correction of vacuum spark advance in the many cars and trucks in which the distributor plate operates on three ¼ in. steel balls moving in a groove in the distributor housing is now an easy five to 10-minute operation.



A simple, practical tool for this job has been developed by Gill Instrument Co. of Philadelphia, Pa. It regrooves the worn or pitted ball race to a perfect radius for the original ¼ in. dia. balls, thus renewing the correct cam angle in this type of distributor as used by G.M.C. trucks, for example.

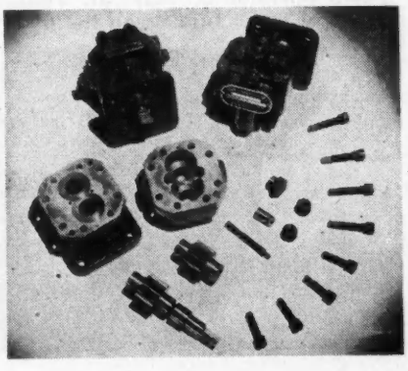
With the distributor shaft removed and tool locked in a vise, any eccentricity of the groove with the shaft bushing, due to wear, seasoning or incorrect original machining, can be entirely corrected in a matter of minutes. The cutter blade is fed into contact with the groove a thousandth at a time by a feed screw, and is not dependent upon hand tension for the accuracy of cutter contact with the wall of the groove. This insures accurate regrooving, concentric with the shaft bushing on every job.

Use Free Postcard For More Details.

P294. Rotary Pump.

A new, low pressure, rotary pump for pumping all types of liquids having lubricating qualities, has been announced by the John S. Barnes Corp., of Rockford, Ill. The new Barnes pump is designed for use as a lubricating booster pump for oil lines, a gasoline dispensing pump and for oil pressure systems on automotive, truck or tractor equipment. It also is suited for use on torque converters.

Capacity of the Barnes pump ranges proportionately from one gallon per minute at 600 r.p.m. to four gal. per minute at 2400 r.p.m. It has a high volumetric efficiency pumping extremely low viscosity fluids.



An outstanding feature of the new pump is the Barnes patented spur gear tooth form, which is said to eliminate excessive sliding, and reduce slippage of the fluid to a minimum; each tooth completely fills the mating space, providing a seal where the gears mesh. Thus, positive displacement of the fluid is assured despite variation in viscosity.

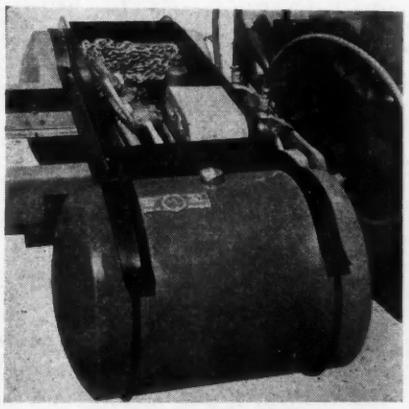
Light weight and small space features of the Barnes pump may also be used advantageously; weight is 3½ lb., complete.

Use Free Postcard For More Details.

P295. Safety Gasoline Tank

Prior Products of Dallas, Tex., has started operations in its new plant at Clinton, Ill., to take care of the new Prior Safety Tank and Tool Box Assembly.

Prior Safety Tanks and Tool Assemblies are reported to be pilferproof. They have a cast brass filler cap which is vented to prevent vapor lock, and chained to the tank to prevent loss. The tanks are of cylindrical design, made of 12-gage steel, pickled and oiled.



The exclusive Prior curved angle iron suspension assures secure fastening of the tank to the frame, giving an added road clearance. Another exclusive Prior feature of the tool box is extra sturdy, spacious storage space, and a special well in which the hydraulic jack is always set and kept in an upright position, something which has a special appeal to drivers. The box also can have a special battery well installed at slight additional installation expense. The boxes can be securely locked against theft.

Use Free Postcard For More Details.

(TURN TO PAGE 168, PLEASE)

Pennsylvania superhighway gives fleets flash service by locating late, lost or stolen trucks, rerouting traffic and summoning mechanics to handle road failures

PROOF OF TWO-WAY RADIO'S VALUE

Many claims have been made in support of two-way radio communication by fleet operators with vehicles in their respective fleets. Experience has shown that the claims are sound.

This article deals with actual incidents that occurred on the

Turnpike's T

by C. R. Buohl

Director Public Relations, Pennsylvania Turnpike Commission

C. R. Buohl

WITH four years of successful traffic radio control to it's credit, the Pennsylvania Turnpike, linking Harrisburg and Pittsburgh, has performed valuable and time saving services to commercial users. Before the opening of the Turnpike to traffic (Oct. 1, 1940), the Commission fully realized that even a superhighway, designed to eliminate 95 per cent of all traffic accidents, would have its share of crack-ups and fatalities. Determined to reduce accidents and fatalities to a minimum, the Commission put into operation the most outstanding system of highway radio communication in the country.

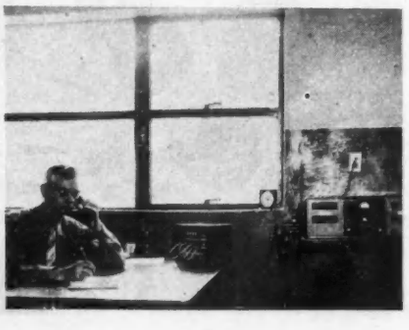
This two-way radio system affords a safeguard to all Turnpike users, in traffic control and accident prevention. It provides the newest and speediest method of police communication for crime prevention and apprehension. It makes available valuable aids to truckers in checking and locating equipment that is late, lost or stolen and for transmittal of emergency messages to the drivers. Trucking company officials, along with truck drivers, daily depend upon the system to expedite movements in case of breakdowns that require towing or repair services.

Many extraordinary incidents have occurred which were quickly and effectively handled over the radio. Not long ago, a driver had been observed as drunk in the cab of his truck, at one of the service stations. Reported to the police, a message was flashed over the system. All Turnpike interchange collectors, tunnel guards and state police were alerted. One of the patrol cars checked the service station but the driver and truck had gone. Another message was flashed, giving direction of travel and notifying nearest tunnel guard to make the apprehension. Within 15 minutes the driver was stopped at the tunnel, taken from the truck and placed under arrest. Officials of the trucking company were notified immediately and a relief driver was sent to take the truck on through. Many similar cases have been handled wherein drinking brought about the arrest of the driver.

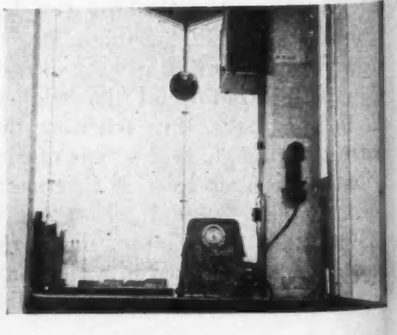
The most common of preventive and apprehension messages put on the two-way system has to do with the "road-happy," "cowboy" driver. Some try to "jitterbug" their tractors while screaming out a hot tune. Others prefer the "snake-crawl" of cutting from one lane of traffic into another and then back again. Then, there are those "neighborly types" that pull their trucks abreast of each other to hold a five or ten mile "chum chat" while traveling 50 miles per. Oh yes, let's not forget the "hell diver" who kicks it out down-grade and relaxes in the thrill of defying death. No, the "cowboy" driver is not welcome on the Turnpike, at least, the police take a special plea-

Radio control desk at Pennsylvania Turnpike Police headquarters

Radio operator at Blue Mt. Tunnel, one of seven tunnels on the pike



Two-way radio equipment is located in each of Turnpike's 10 ticket offices



160-mile stretch of the Pennsylvania Turnpike, involving the use of the superhighway's two-way radio facilities. They are incidents with a happy ending, but the result not only might have been unhappy, if not tragic, but very costly. They eloquently corroborate some fleet operators' claims. Here are two specific cases:

. . . A drunken truck driver was located and picked up by Turnpike police before his condition could cause damage or loss of vehicle, cargo, other property and, perhaps, his own life. Officials of the trucking company were notified and a relief driver was sent to take over.

. . . A semi-trailer, loaded with Garand rifles intended for shipment overseas, was erroneously dispatched westward from Philadelphia. Turnpike authorities were notified and the driver was stopped just as he reached the Turnpike entrance. The vehicle was promptly re-routed to its proper destination.

The article gives other examples. The facts speak for themselves.

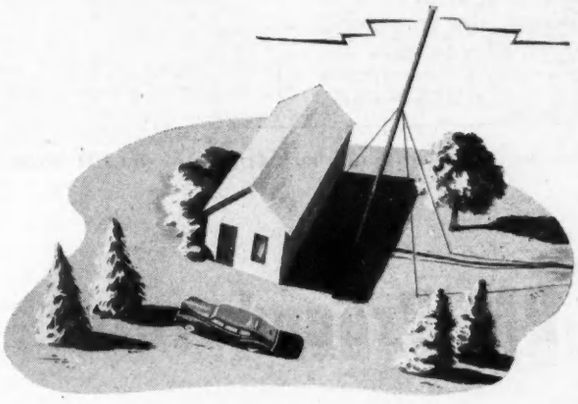
Two-Way Radio Helps Trucks

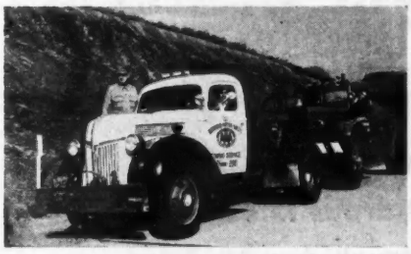
sure in nailing the law to such lamebrain drivers.

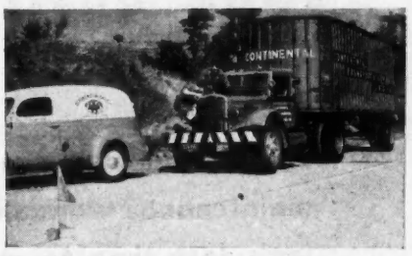
Typical Emergency Service

Emergency calls, by trucking companies, to the Turnpike Commissions' offices and to the various Interchange Ticket Booths have been numerous and ever changing in nature. Yet every request has its degree of importance and is seriously treated as such, thereby given immediate attention. Typical of these emergencies, wherein the radio, police and turnpike employees do a quick job of locating, is a case which happened a few weeks ago. A carrier, out of Philadelphia, ordered a semi-trailer moved out of the terminal by mistake but when this error was discovered, the driver had over four hours on the

(TURN TO PAGE 134, PLEASE)

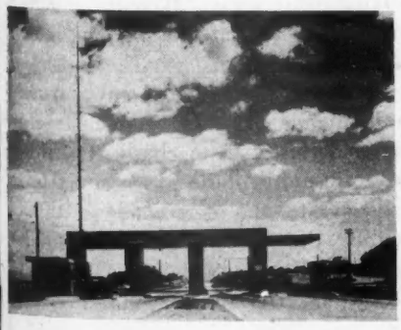






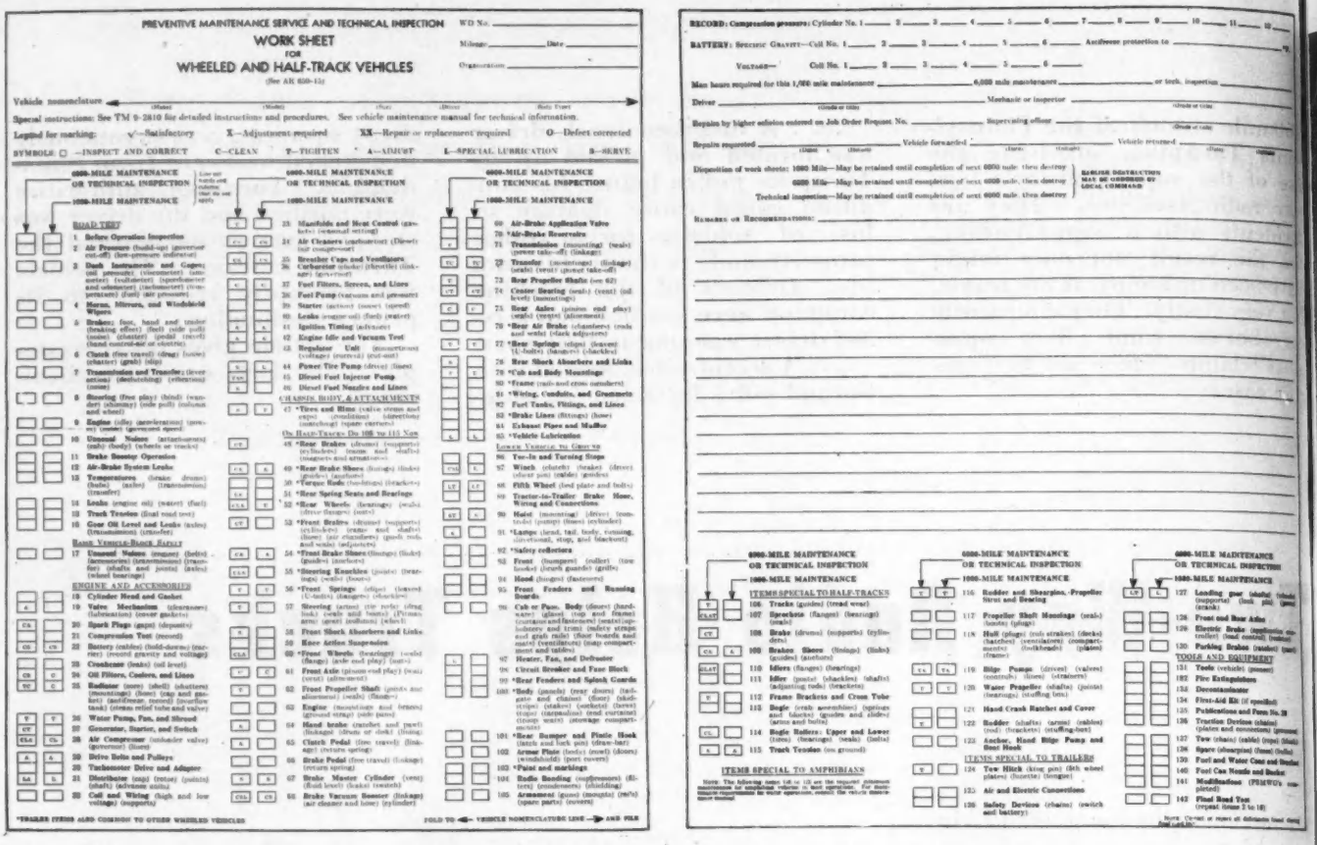
In case of breakdowns, Turnpike police cooperate with truck operators by summoning reliable mechanical service, if desired, to keep lost time to a minimum

Eastern terminus ticket office at Carlisle, showing its radio antenna



One of 26 police patrol cars in Turnpike service shows its two-way radio

Crash-fire truck, located between Twin Tunnels, is ready for emergencies



PREVENTIVE MAINTENANCE SERVICE AND TECHNICAL INSPECTION

WORK SHEET

FOR

WHEELED AND HALF-TRACK VEHICLES

(See AR 850-15)

WO No. _____

Mileage _____ Date _____

Organization _____

Vehicle nomenclature ◄ (Make) (Model) (Year) (Driver) (Body Type)

Special instructions: See TM 9-2810 for detailed instructions and procedures. See vehicle maintenance manual for technical information.

Legend for marking: √—Satisfactory X—Adjustment required XX—Repair or replacement required O—Defect corrected

SYMBOLS: □—INSPECT AND CORRECT C—CLEAN T—TIGHTEN A—ADJUST L—SPECIAL LUBRICATION S—SERVE

6000-MILE MAINTENANCE OR TECHNICAL INSPECTION

1000-MILE MAINTENANCE

ROAD TEST

1 Before Operation Inspection

2 Air Pressure (build-up) (governor cut-off) (low-pressure indicator)

3 Dash Instruments and Gages: (oil pressure) (viscosimeter) (ammeter) (talltale) (speedometer and odometer) (tachometer) (temperature) (fuel) (air pressure)

4 Horns, Mirrors, and Windshield Wipers

5 Brakes: foot, hand and trailer (braking effect) (feel) (side pull) (noise) (chatter) (pedal travel) (hand control-air or electric)

6 Clutch (free travel) (drag) (noise) (chatter) (grab) (slip)

7 Transmission and Transfer: (lever action) (declutching) (synchronizing) (noise)

8 Steering (free play) (wind) (wander) (chatter) (side pull) (rebound and wheel)

9 Engine (idle) (acceleration) (power) (noise) (governed speed)

10 Unusual Noises (intake-exhaust) (axle) (body) (wheels or tracks)

11 Brake Booster Operation

12 Air-Brake System Leaks

13 Temperatures (brake drums) (hubs) (axles) (transmission) (transfer)

14 Leaks (engine oil) (water) (fuel)

15 Track Tension (final road test)

16 Gear Oil Level and Leaks (axles) (transmission) (transfer)

BASIC VEHICLE-BLOCK REPEAT

17 Unusual Noises (engine) (belts) (accessories) (transmission) (transfer) (shafts and joints) (axles) (wheel bearings)

ENGINE AND ACCESSORIES

18 Cylinder Head and Gasket

19 Valve Mechanism (clearance) (lubrication) (cover gaskets)

20 Spark Plugs (gaps) (deposits)

21 Compression Test (record)

22 Battery (cables) (hold-downs) (carrier) (record gravity and voltage)

23 Crankcase (leaks) (oil level)

24 Oil Filters, Coolers, and Lines

25 Radiator (core) (shell) (shutters) (mountings) (hose) (cap and gasket) (baffles) (coverplate) (overflow tank) (steam relief tube and valve)

26 Water Pump, Fan, and Shroud

27 Generator, Starter, and Switch

28 Air Compressor (unloader valve) (governor) (lines)

29 Drive Belts and Pulleys

30 Tachometer Drive and Adapter

31 Distributor (cap) (rotor) (points) (shaft) (advance units)

32 Coil and Wiring (high and low voltage) (supports)

1000-MILE MAINTENANCE OR TECHNICAL INSPECTION

1000-MILE MAINTENANCE

33 Manifolds and Heat Control (valve) (seasonal setting)

34 Air Cleaners (carburetor) (Diesel) (air compressor)

35 Breather Caps and Ventilators

36 Carburetor (choke) (throttle) (linkage) (governor)

37 Fuel Filters, Screen, and Lines

38 Fuel Pump (vacuum and pressure)

39 Starter (action) (cover) (speed)

40 Leaks (engine oil) (fuel) (water)

41 Ignition Timing (advance)

42 Engine Idle and Vacuum Test

43 Regulator Unit (mountings) (voltage) (current) (cut-out)

44 Power Tire Pump (drive) (lines)

45 Diesel Fuel Injector Pump

46 Diesel Fuel Nozzles and Lines

CHASSIS, BODY, & ATTACHMENTS

47 *Tires and Rims (valve stems and caps) (condition) (pressure) (matching) (spare carriers)

On Half-Tracks Do 10E to 11G Inc

48 *Rear Brakes (drums) (supports) (cylinders) (arms and shafts) (magnets and armatures)

49 *Rear Brake Shoes (linings) (links) (guides) (anchors)

50 *Torque Rods (bushings) (brackets)

51 *Rear Spring Seats and Bearings

52 *Rear Wheels (bearings) (seals) (drive flanges) (nuts)

53 *Front Brakes (drums) (supports) (cylinders) (arms and shafts) (hose) (air chambers) (quick release and seals) (adjusters)

54 *Front Brake Shoes (linings) (links) (guides) (anchors)

55 *Steering Knuckles (joints) (bearings) (seals) (bosses)

56 *Front Springs (slips) (lowers) (U-bolts) (hangers) (shackles)

57 Steering (arms) (tie rods) (drag link) (cotter pins and bolts) (Pitman arm) (gears) (bolsters) (wheel)

58 Front Shock Absorbers and Links

59 Knee Action Suspension

60 *Front Wheels (bearings) (seals) (flange) (axle end play) (nuts)

61 Front Axle (pivots end play) (seal) (strut) (alignment)

62 Front Propeller Shaft (joints and splines) (seals) (flanges)

63 Engine (mountings and brakes) (ground strap) (side pans)

64 Hand brake (ratchet and pawl) (linkage (drum or disk) (lining)

65 Clutch Pedal (free travel) (linkage) (return spring)

66 Brake Pedal (free travel) (linkage) (return spring)

67 Brake Master Cylinder (vent) (fluid level) (leaks) (switch)

68 Brake Vacuum Booster (linkage) (air cleaner and hose) (cylinder)

6000-MILE MAINTENANCE OR TECHNICAL INSPECTION

1000-MILE MAINTENANCE

69 Air-Brake Application Valve

70 *Air-Brake Reservoirs

71 Transmission (mountings) (seals) (power take-off) (linkage)

72 Transfer (mountings) (linkage) (seals) (vents) (power take-off)

73 Rear Propeller Shafts (see 62)

74 Center Bearing (seals) (vents) (oil level) (mountings)

75 Rear Axles (pinion end play) (seals) (vents) (alinement)

76 *Rear Air Brakes (chambers (rods and webs) (slack adjusters)

77 *Rear Springs (slips) (leaves) (U-bolts) (bushings) (shackles)

78 Rear Shock Absorbers and Links

79 *Cab and Body Mountings

80 *Frame (rails and cross members)

81 *Wiring, Conduits, and Grommets

82 Fuel Tanks, Fittings, and Lines

83 *Brake Lines (fittings) (hose)

84 Exhaust Pipes and Muffler

85 *Vehicle Lubrication

LOWER VEHICLE TO GROUND

86 Toe-In and Turning Stops

87 Winch (clutch) (brake) (drive) (shear pin) (cable) (guides)

88 Fifth Wheel (kod plate and bolts)

89 Tractor-to-Trailer Brake Hose, Wiring and Connections

90 Hoist (mounting) (drive) (controls) (pump) (hose) (cylinder)

91 *Lamps (head, tail, body, turning, directional, stop, and blackout)

92 *Safety reflectors

93 Front (bumpers) (rollers) (tow hooks) (brush guards) (grills)

94 Hood (hinges) (fasteners)

95 Front Fenders and Running Boards

96 Cab or Pass. Body (doors) (hardware) (glass) (trim and floor) (mountings and fasteners) (seats) (upholstery and trim) (safety straps and grab rails) (floor boards and mats) (ventilators) (map compartment and tables)

97 Heater, Fan, and Defroster

98 Circuit Breaker and Fuse Block

99 *Rear Fenders and Splash Guards

100 *Body (panels) (rear doors) (hardware) (glass and frame) (floor) (sideslips) (stakes) (corkets) (bows) (ridge) (tarpaulins) (tool curtains) (troop seats) (storage compartments)

101 *Rear Bumper and Pintle Hook (latch and lock pin) (draw-bar)

102 Armor Plate (body) (cowl) (doors) (windshield) (port covers)

103 *Paint and markings

104 Radio Bonding (suppressors) (filters) (condensers) (shielding)

105 Armament (guns) (mounts) (rails) (spare parts) (covers)

*TRAILER ITEMS ALSO COMMON TO OTHER WHEELED VEHICLES

FOLD TO ◄— VEHICLE NOMENCLATURE LINE —► AND FILE

RECORD: Compression pressures: Cylinder No. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10 _____ 11 _____ 12 _____

BATTERY: Specific Gravity—Cell No. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ Antifreeze protection to _____ °F.

Voltage— Cell No. 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____

Man hours required for this 1,000 mile maintenance _____ 6,000 mile maintenance _____ or tech. inspection _____

Driver _____ (Grade or title) Mechanic or inspector _____ (Grade or title)

Repairs by higher echelon entered on Job Order Request No. _____ Supervising officer _____ (Grade or title)

Repairs requested _____ (Signed) (Date) Vehicle forwarded _____ (Time) (Mileage) Vehicle received _____ (Time) (Mileage)

Disposition of work sheets: 1000 Mile—May be retained until completion of next 6000 mile then destroy

6000 Mile—May be retained until completion of next 6000 mile, then destroy

Technical inspection—May be retained until completion of next 6000 mile, then destroy

} REGULAR DISTRIBUTION MAY BE ORDERED BY LOCAL COMMAND

REMARKS OR RECOMMENDATIONS: _____

6000-MILE MAINTENANCE OR TECHNICAL INSPECTION

1000-MILE MAINTENANCE

ITEMS SPECIAL TO HALF-TRACKS

106 Tracks (guides) (road wear)

107 Sprockets (flanges) (bearings) (seals)

108 Brake (drums) (supports) (cylinders)

109 Brakes Shoes (linings) (links) (guides) (anchors)

110 Idlers (flanges) (bearings)

111 Idler (pivot) (shackles) (shafts) (adjusting rods) (brackets)

112 Frame Brackets and Cross Tube

113 Bogie (crab assemblies) (springs and blocks) (guides and slides) (arms and bolts)

114 Bogie Rockers: Upper and Lower (arms) (bearings) (seals) (bolts)

115 Track Tension (on ground)

ITEMS SPECIAL TO AMPHIBIANS

Note: The following items 116 to 125 are the required minimum maintenance for amphibian vehicles in hard operations. For more complete requirements for water operations, consult the vehicle maintenance manual.

6000-MILE MAINTENANCE OR TECHNICAL INSPECTION

1000-MILE MAINTENANCE

116 Rudder and Shearpins, Propeller Strut and Bearing

117 Propeller Shaft Mountings (seals) (bolts) (plugs)

118 Hull (plugs) (rub strakes) (decks) (hatches) (ventilators) (compartments) (bulkheads) (plates) (frame)

119 Bilge Pumps (drives) (valves) (controls) (lines) (strainers)

120 Water Propeller (shafts) (joints) (bearings) (stuffing box)

121 Hand Crank Ratchet and Cover

122 Rudder (shafts) (arms) (cables) (rod) (brackets) (stuffing box)

123 Anchor, Hand Bilge Pump and Boat Hook

ITEMS SPECIAL TO TRAILERS

124 Tow Hitch (king pin) (fifth wheel plates) (lunette) (tongue)

125 Air and Electric Connections

126 Safety Devices (chains) (switch and battery)

6000-MILE MAINTENANCE OR TECHNICAL INSPECTION

1000-MILE MAINTENANCE

127 Landing gear (dolly) (supports) (leg pin) (jaws) (crank)

128 Front and Rear Axles

129 Electric Brake (application circuit) (load control) (wiring)

130 Parking Brakes (trailer) (jaws) (frame)

TOOLS AND EQUIPMENT

131 Tools (vehicle) (present)

132 Fire Extinguishers

133 Decontaminator

134 First-Aid Kit (if specified)

135 Publications and Form No. 28

136 Traction Devices (chains) (plates and accessories) (present)

137 Tow (chains) (cable) (rope) (link)

138 Spare (absorption) (tread) (tube)

139 Fuel and Water Cans and Brackets

140 Fuel Can Nozzle and Basket

141 Modifications (FSWOs completed)

142 Final Road Test (repeat items 2 to 16)

Note: Correct or report all differences found during final road test.

Shown above are the front (left) and back (right) of the PM Work Sheet used at Tank Destroyer Center, Camp Hood, Tex.

PM Procedure at Tank Destroyer Center

Army's thorough training methods and its maintenance work sheet drops this battalion's lost time to one truck for 35 days

by D. D. Saggese

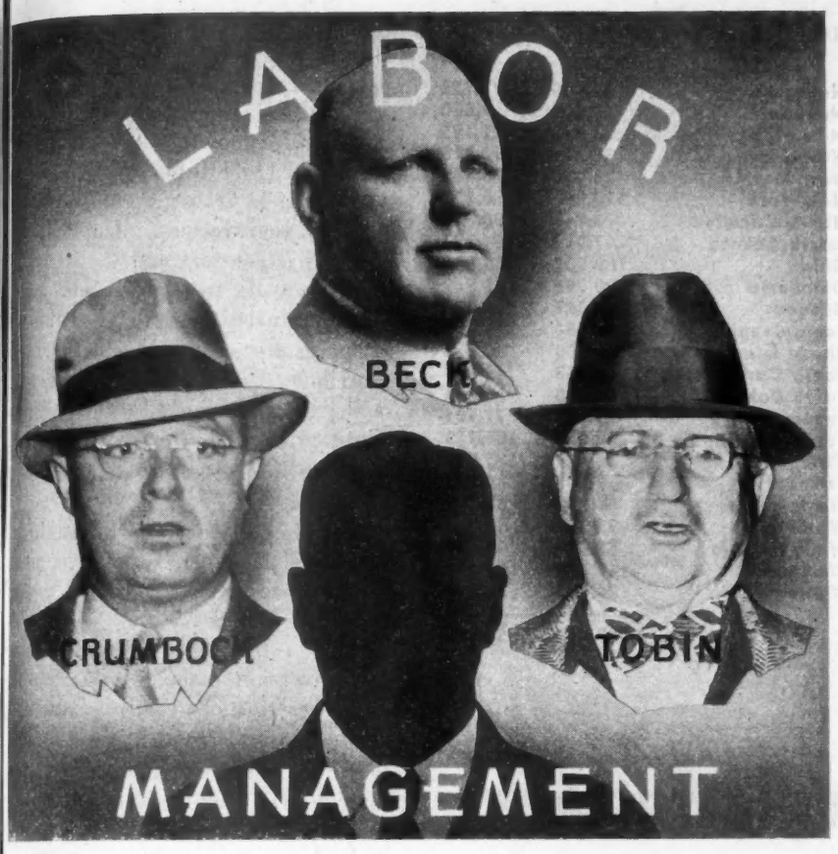
Lieutenant, Tank Destroyer School, Camp Hood, Tex.

AT CAMP HOOD, Texas, as in all military installations, a battalion operates as a distinct unit. With respect to truck operation and maintenance, a battalion is comparable to a large truck transportation company. However, responsibility for care and maintenance of a battalion's trucks is broken down to companies, which is comparable to a branch of a large truck transportation company. Each company has its own vehicles and is responsible for their condition. These are kept in what is known as a "motor pool"—the civilian equivalent of a garage. The operation details were described in an article which appeared in the May, 1944, issue of COMMERCIAL CAR JOURNAL.

By now it is well known that the Army's vehicle operation and maintenance methods are extremely thorough. The reason should be obvious. The fast, hard-hitting tactics of this war demand extreme mobility. Unbroken supply lines must be maintained. Mechanized armament must keep moving. Breakdowns can be calamitous. Peak efficiency, therefore, resolves itself to a matter of life or death.

The success of the Army's truck maintenance program is due largely to its driver and mechanic training programs. Proper procedures are drilled into the personnel so thoroughly that they become a fixed habit.

(TURN TO PAGE 132, PLEASE)



STATUS QUO QUOTES

"Labor has been successful in reaching many of its objectives because it has a high degree of organization and a clear purpose. Management has failed because it has neither.

"The International Brotherhood of Teamsters is set up almost on military lines. It has its general staff, its top command, its board of strategy and its intelligence. The joint councils and local unions constitute its regiments and companies.

"Labor has but a single objective and works unrelentingly toward it every day in the year. On the other hand, wherever organization of management exists, it has proved to be totally inadequate.

"It would seem that a factor that takes approximately 50 per per cent of every revenue dollar might well come in for a little more specialized attention and handling."

Management Must Organize to Match Labor's Strength

Truck operators need sound labor policy and a labor relations organization to solve and stabilize the industry's labor problems

by Everett B. Lackie

Vice President and General Manager, V. J. Schell & Sons, Inc., Baltimore, Md.

Everett B. Lackie

ONE has but to look at the turbulence and discord in the trucking industry to become convinced that changes in labor relations are necessary if the industry is ever to become stabilized on a progressive course. While the blame for prevalent disruptive conditions can be equally shared by management and labor, management should take the initiative in corrective action. Two steps which seem imperative are the adoption of a sound labor policy by employers, and the formation of an organization to further such a policy.

Labor has been successful in reaching many of its objectives because it has a high degree of organization and a clear-cut purpose. Management has failed because it has neither.

The International Brotherhood of Teamsters is set up on almost military lines. It has its general staff, its top command, its board of strategy and its intelligence. The joint councils and local unions constitute its regiments and companies. Other trade unions, equally well organized, form potent allies, and all are federated and bound together as tightly as the United Nations.

Labor has but a single objective and works unrelentingly toward it

(TURN TO PAGE 156, PLEASE)

Forecast of 1944 Truck Registrations

	1944	1943		1944	1943
Alabama	67,198	65,606	Nebraska	71,000	71,726
Arizona	27,500	27,020	Nevada	10,000	9,850
Arkansas	75,000	71,916	New Hampshire	23,125	27,195
California	338,719	327,204	New Jersey	138,341	137,115
Colorado	70,800	68,887	New Mexico	28,000	28,645
Connecticut	60,000	61,423	New York	310,000	310,258
Delaware	12,300	13,576	North Carolina	95,147	95,600
District of Columbia	14,000	15,037	North Dakota	47,345	44,397
Florida	90,000	84,132	Ohio	180,000	185,596
Georgia	98,586	93,817	Oklahoma	100,786	101,969
Idaho	34,750	35,724	Oregon	81,347	74,724
Illinois	206,500	221,634	Pennsylvania	277,054	275,052
Indiana	122,000	124,195	Rhode Island	20,800	20,575
Iowa	104,500	103,509	South Carolina	49,168	49,257
Kansas	121,276	119,168	South Dakota	36,700	35,028
Kentucky	75,295	73,107	Tennessee	73,000	71,701
Louisiana	70,000	70,691	Texas	287,000	287,223
Maine	44,000	41,959	Utah	24,971	25,549
Maryland	54,123	61,672	Vermont	10,503	10,207
Massachusetts	103,500	104,253	Virginia	86,000	80,878
Michigan	159,000	156,183	Washington	95,500	94,042
Minnesota	113,000	116,026	West Virginia	52,000	47,124
Mississippi	61,500	60,900	Wisconsin	141,180	135,643
Missouri	153,000	148,608	Wyoming	20,000	20,014
Montana	47,500	45,380	Total	4,583,014	4,550,995

1944 Truck Registrations Will Show Gain of 32,000

Preliminary figures submitted by states in CCJ survey indicate 1944 total will show gains in 24 states to surpass 1943

by Marcus Ainsworth
Statistician, Commercial Car Journal

TRUCK registrations will show a gain at the end of 1944 of about 32,000 over those registered during 1943. This increase will be distributed over 24 states and another 11 states will have approximately the same registrations during this year as were counted during 1943.

These astonishing facts were brought to light in the annual forecast of truck registrations conducted by COMMERCIAL CAR JOURNAL, the results of which indicate total truck registrations for 1944 of 4,583,014 as compared with 4,550,995 for 1943, 4,624,310 for 1942 and 4,825,978 for 1941, the peak year of truck registrations.

Forty-five states and the District of Columbia cooperated with COMMERCIAL CAR JOURNAL in preparing this survey. Actual returns were furnished, in most cases, through September 30, and were supplemented by estimates for the remaining period of the year. A few of the states included buses with the truck registrations, and one state, California, included light commercial vehicles with passenger cars. However, in the case of California, we have transferred these light commercial vehicles which numbered 117,119 for 1944 and 115,842 for 1943 from passenger car to truck registrations. Duplications caused by transfers and the registration of a truck in several states have been eliminated wherever possible.

There are several factors which contribute to this unexpected upswing in truck registrations. First, approximately 112,000 trucks will have been released for civilian use during 1944 by ODT and WPB.

Second, it is quite probable that numerous passenger cars have been converted to light trucks. In many cases the passenger car had been used as a light truck anyhow, and the conversion made it possible for the owner to more easily secure additional gasoline and tires.

Third, restricted mileage regulations of ODT took many trucks, especially those of private fleet operators, off the road during 1942 and 1943. These, no doubt, have been used to replace many of those commercial vehicles which, either through accident or just plain fatigue, had to be withdrawn from service.

Fourth, it has been absolutely necessary for truck owners to keep their vehicles in service and, because of their essentiality, it has been possible to secure needed replacement parts while in the case of passenger cars, in most instances, necessary parts were not so easily obtained.

It is a tribute to the material and workmanship which went into the trucks at the factories of the producers that 1944 is able to show an increase in registrations rather than a substantial decline, as was fully expected. However, we must not overlook the contribution of the maintenance men throughout the country, whether they be in fleet shops, dealer or independent service establishments, who operated under the most difficult conditions of too few employees, too few parts and substitute materials, but who kept the trucks running. Given the parts and the material with which to work, our vitally essential truck transportation will be maintained at a safe level until the time when unlimited production for civilian use will be possible.

WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 36)

1945. Production will be spread over the 12 months and ODT would like applications to be similarly spread. A formula it would like operators to adopt is that of filing applications not more than 60 days prior to the time when the truck is actually needed. In the case of heavy trucks it might be 90 days. At the first sign of a flood of applications ODT district offices will be instructed to forward approved applications to Washington in amounts that are in line with the Allocation Section's daily capacity. If there is any pile up it will be in the district offices, which are better able to exercise some degree of control.

44,343 Trucks to Farmers

Here are the latest truck rationing figures: As of Oct. 31, 191,326 trucks were transferred to civilian operators from the start of rationing March 9, 1942. Of this total farmers received 44,343 or 23.18 per cent, the largest share of any vocation. For-hire carriers were in second place with 22,882 or 11.96 per cent. In the same period 34,600 trailers were rationed to civilian users. For-hire carriers topped the vocational list with 40 per cent.

Army Probed on Parts

The Meade Committee (formerly the Truman Committee) of the U. S. Senate has been investigating the automotive parts situation and reports were current in Washington that the Army would take a shellacking for the shortages and manpower and material waste that its procurement methods helped create.

Anybody Want a Jack?

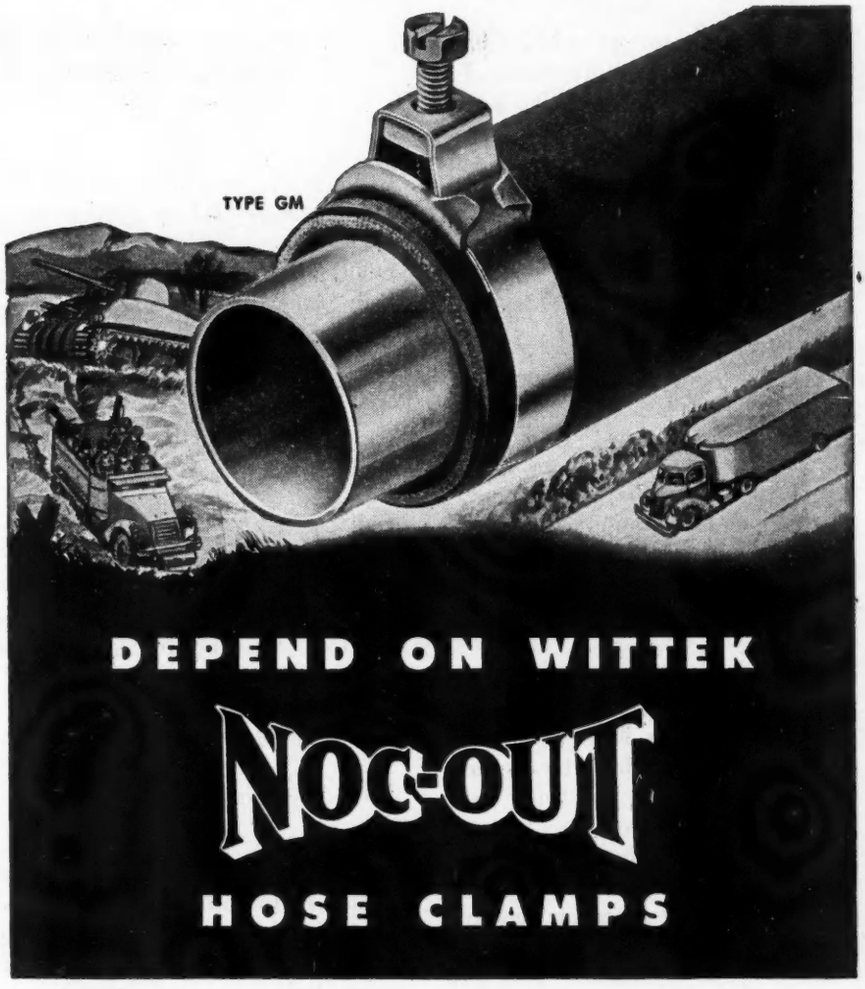
The Army has released 10,700 automotive jacks of 10-ton capacity. A number of jack manufacturers were reported dickering to buy up the lot. This department was informed that this quantity is equivalent to four years' normal production. It may be, judging by the number of appeals for 10-ton jacks received by WPB. They total 1800. Appeals for 4-ton jacks total 9600.

Government Operation Notes

In Federal circles there is optimism that the Interstate Commerce Commission will approve ODT's request for a change in the rates charged by the mid-western truck lines recently taken over by the Government. The Government started with 103 lines and as of Nov. 15 was down to 93 lines. Ten operators met all War Labor Board requirements and pulled out to continue on their own. The only financial note coming out of the mid-west is that Ellis Longenecker, the able Government operator, has been given a boost in pay from $8500 to $10,500. The dough comes out of an emergency fund, not out of the ODT appropriation. It's chicken-feed compared with some of the salaries that Government accountants have been scanning out in the mid-west.

END

(Please resume your reading on P. 37)



Type A—Adjustable For Replacement.

The standard of the industry. Quick-tightening, perfect leak-proof hose connections, for original equipment and replacement. For Radiator, Heater, Booster Brakes and High Pressure hose connections. Wittek Manufacturing Co., 4305-15 W. 24th Place, Chicago, Ill.

Type HP—For High Pressure Requirements.

WITTEK WMCO NOC-OUT HOSE CLAMPS

CCJ QUIZ

by ROBERT F. BAHL

Correct Answers on Page 166

Four years ago you couldn't have answered these Quiz questions. Today, though, you should make a very respectable score, especially if you've kept up to date with our Army's motorized equipment. Credit 10 points for each correct answer. Compare your choices with the answers on Page 166.

1.

A soldier coming upon a red stripe around the base of an inner tube would immediately know that the tube . . .

a. was made of synthetic rubber
b. was unsafe for combat duty
c. had been captured from the enemy
d. had been punctured and repaired

2.

Remember the enormous parking lot at the World's Fair Grounds in New York? Well, don't try to park there now, because it's being used as . . .

a. a proving grounds for secret Army vehicles
b. a parking space for repaired Army vehicles and vehicles awaiting repair
c. a target range for medium tanks
d. a stockpile for Army tires

3.

When the commanding officer talks about "cannibalizing" a truck, his intention is to . . .

a. assign a colored driver to the truck
b. camouflage the truck
c. dismantle it and use its parts for repairing other vehicles
d. fill it with explosives and set it going in the direction of the enemy lines

4.

When you're wishing that T coupons were printed on rubber paper so they would stretch further, just remember that a whole tank-car of high octane gas is sufficient to fill the tanks of just . . .

a. one B-29 superfortress
b. three B-29 superfortresses
c. ten B-29 superfortresses
d. twenty-five B-29 superfortresses

5.

Whoa, Prancer! Giddap, Dasher! It's not Santa Claus and his reindeer. Up in the Arctic regions you might find G.I. Joe with reins in his hands, manipulating . . .

a. a Jeep
b. an M-29 Weasel
c. A General Grant tank
d. a "Wiggly Igloo"

6.

On a half-track you expect to find tractor treads on the rear half and wheels in front. You'll find the tractor part on the Army's M-7 all right, but instead of wheels there are . . .

a. pontoons
b. skis
c. rollers
d. plows

7.

Why, can you tell us, would the Army attach an "odograph" to a truck

a. to prevent unauthorized use of the truck
b. to test the exhaust gases
c. so the driver will have a written record of the orders of the day
d. to plot the course taken by the truck

8.

There are some who claim that the "bulldozer" is the most valuable of all our weapons of war, bar none. It's an odd name, so see if you can pick the origin of the term.

a. a sleeping bull
b. a dose of the bull-whip
c. its inventor, a Mr. Bull Dozer
d. a variation of the Mack bulldog

9.

It has been a secret weapon until now. It has the speed of a passenger car . . . the firepower of a tank . . . the armor of a mobile fortress. It can go 500 miles without refueling. The British call it the "Staghound." It's made by . . .

a. Ford
b. Chevrolet
c. Dodge
d. Packard

10.

If you are the average reader, it will take you 15 seconds to read this question. In that amount of time, just one of our mechanized divisions will be burning up . . .

a. 5 gal. of gasoline
b. 25 gal. of gasoline
c. 75 gal. of gasoline
d. 1000 gal. of gasoline

This attention-compelling display is painted on the front-end of a Fruehauf Trailer operated by Motor Cargo, Inc., of Akron, Ohio. The big truck-trailers, which are transporting war material, are being used effectively for displays selling bonds and inspiring patriotism

IF YOU'VE GOT A MACK, YOU'RE LUCKY...

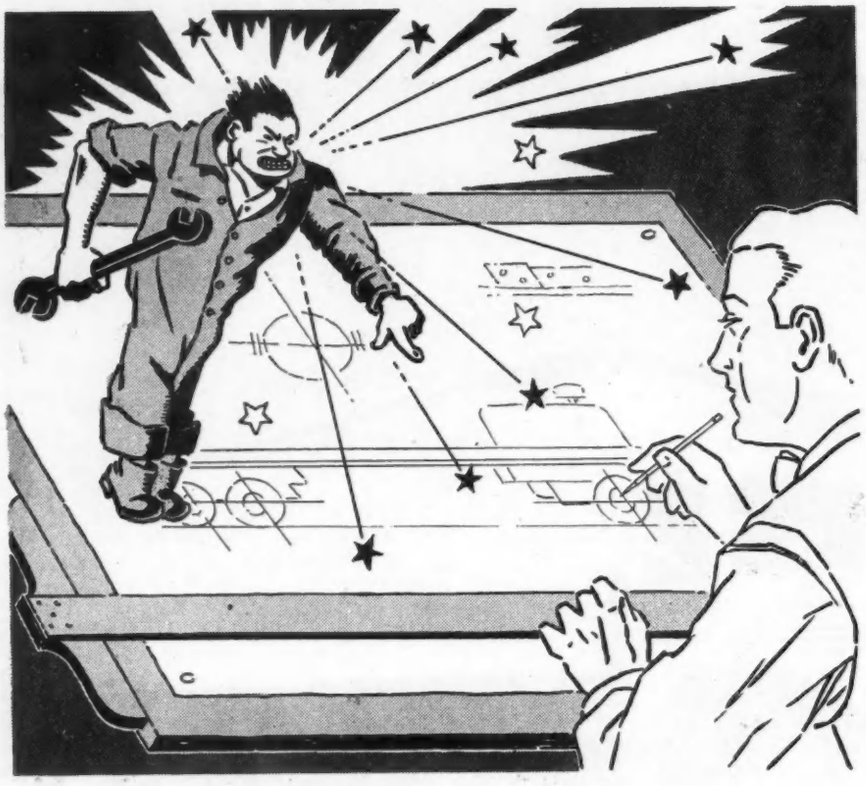
We don't have to tell a Mack owner why. He knows what we mean when he checks his low operating costs and when he totals up the number of days a year his Mack stays on the job and out of the repair shop. The longer the war continues, the more he appreciates how wise he was to invest in Mack stamina and Mack dependability. Most of the Macks built 12 years ago are still in service, still on the road . . . so are some Macks built during the last war . . . all proving over and over the rightness of the saying . . . "If you've got a Mack, you're lucky . . . if you plan to get one, you're wise."

Mack Trucks, Inc., Empire State Building, New York, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.: New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.

Mack

TRUCKS
FOR EVERY PURPOSE
ONE TON TO FORTY-FIVE TONS

BUY U. S. WAR BONDS



Design Must Take Accessibility Into Account

Engineer doubts that styling will be radical and stresses functionability which may bring unconventional design

by ROBERT CASS
Chief Engineer, The White Motor Co.

FAVORS TRUCKERS' DEMANDS

"Generally speaking," say the author, "the postwar vehicles, I hope, will be simple, functionable, gadget-free designs in which all the 'doo-dads' are eliminated and with the full consent of the operators.

"It is well-known that the engineers who design them, and those who later maintain them, are frequently over-ruled in their desire for simplicity by the sales and advertising departments, who feel that a few mills per mile should me thrown to the winds for purposes which they think justify this abandon. Let us hope that they will have less influence in terms of stylized appearance and more influence in keeping engineers on their toes in meeting the real demands of transportation."

Robert Cass

HAVING looked at the many illustrations which have been displayed, in various advertisements and magazines in the last year to eighteen months, as postwar trucks, I can't help but feel that this is a good time to say that I question seriously, first, whether anyone could be persuaded to build them as depicted, and, second, whether manufacturers might not run the risk of being assassinated by the operators if they did build them.

The pictorial forecasts have in some cases gone wild. We have seen trucks with streamlining, so called, in all directions; we have seen them with the driver perched practically on top of the body. We have seen them designed from the point of view of driver vision, and we have seen them so designed that only radar could get the driver safely to his objective. This is merely our way of saying that there seems to be no excuse for our getting ourselves into postwar designs where style and style only is the important factor. After all, functionability must be stressed first, even though this functionability may occasion severe design lines as far as appearance is concerned.

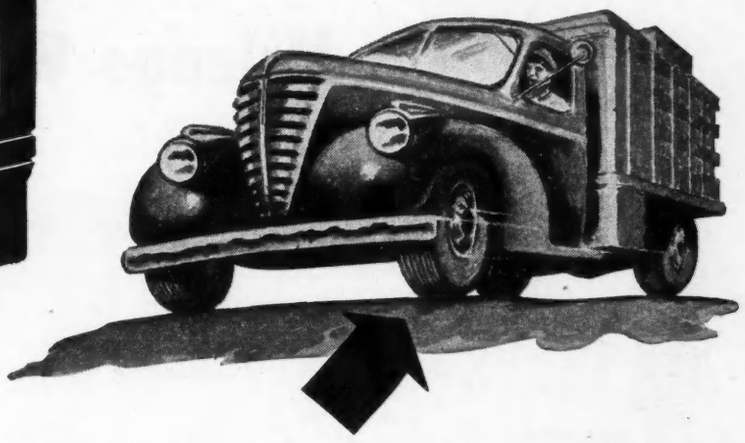
The other thing I would like to stress is that our ability to make changes is still entirely in the laps of the Gods, because the war effort still makes it impossible to determine when any newly designed trucks will appear on the market. Obviously, the timing of the production of postwar models may have a great deal to do with the emphasis on certain design features.

Perhaps the first thing we might discuss at this stage, to some degree tied-up with style, is the question of the driver and his cab. We feel very strongly that determined efforts must be made within the limits of sound economics, which, of course, include cost and weight, to provide the ultimate in comfort for the man who spends his working day, sometimes many hours at a stretch, behind the wheel. Perhaps the three major things are his seat comfort, his vision for safety, and the ventilation which

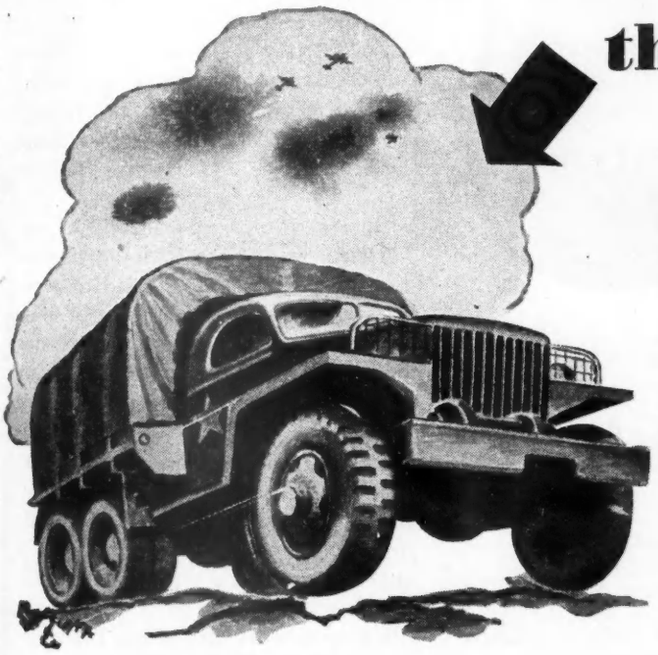
(TURN TO PAGE 126, PLEASE)

★ TRUCKS CARRY A WAR LOAD ★

SUPPORT THE 6th WAR LOAN
LEND OVER HERE, TILL
IT'S OVER, OVER THERE



Exides . . . here at the start . . . there at the finish



ARMY E NAVY

Exide
EXTRA DUTY
BATTERIES

SPEED all along the line—from factory to battle front—is vital. Supplies must reach our fighting men and their fighting machines—in ample quantities, safely, and . . . on time. America's mighty motor fleets, equipped with Exide Batteries, assure a certain and speedy start. The last lap, run by Uncle Sam's Exide-equipped supply trucks, ends at the front line.

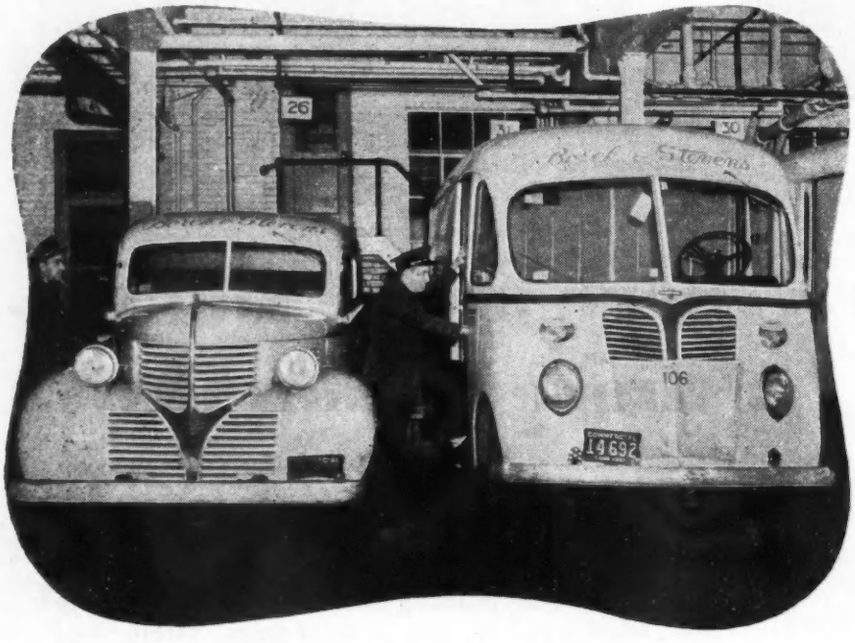
That the first lap is covered so regularly and so well reflects great credit on fleet owners, drivers and maintenance men, who have done a magnificent job. In spite of manpower shortage, scarcity of replacement parts, and obsolete equipment, maintenance men have added thousands of profitable miles to trucks that long ago passed the retirement age.

Even when conditions are extra tough, fleet owners, truck drivers and maintenance men know they can count on their sturdy, powerful Exides for dependability, long-life and ease of maintenance. When you buy an Exide, you *Buy to Last.*

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

Body builders will meet needs of postwar business growth with big bodies on light chassis to make longer routes profitable

Postwar Parcel Route Mileage Will Be Extended



by William Carlson
Vice President, Metropolitan Body Co., Bridgeport, Conn.

CONTEMPORARY discussion of postwar deliveries to stores and homes seems to be under the spell of restricted supplies of gasoline, tires, parts and trucks, but it will not remain hypnotized very long after the war ends. All theories to the contrary, distant and more distant routes are as typically American as are rugged individualism and free enterprise.

The motor truck changed the local bakery into a big business, made the big city department store almost a state-wide institution, spread the local laundry over several counties of service, made possible sizeable and more sanitary dairies and transformed dry cleaning from a luxury to a necessity.

Academicians and theorists who preach the so-called economy of limiting deliveries to nearby areas and even restricting competition in those areas, have never grasped the greater economy of reduced overhead and lower selling expenses through the larger volume that broader horizons and intensive competition make possible.

It is my considered judgment that had it not been for the war and ODT restrictions, we should, by now, have had state-wide deliveries in all but our largest states.

I believe that postwar deliveries will see local businesses such as bakeries, laundries, dry cleaners, department stores, frozen foods, dairy products, etc., spreading the stories of their products and services over an ever-widening area, through newspapers and radio campaigns, and the *yardstick of delivery route mileage will be the density of the advertising coverage and its response to their offerings.*

In the prewar era, many local advertisers wasted the outlying circulation of their media or tried to serve it at high cost by parcel post in some instances. But in the progressive business era after the war, with our minds on maintaining employment for all willing to work, it will be logical to cater to the more distant areas reached by the newspapers and radios, now that it is possible to carry double the payload volume on a shorter and lighter delivery unit with man-high loadspace to facilitate handling more deliveries in less time.

The full significance of the changed economics of light deliveries is not realized by those whose minds are shackled to prewar theories. Until the last decade, attempts at covering more territory in store and house-to-house deliveries were with heavier and longer trucks, thus sacrificing economies in operation to get more load-space than was then available on a light, short chassis. The minute the truck industry produced higher, wider and longer bodies on a light

(TURN TO PAGE 144, PLEASE)

America's private truck owners deserve the Nation's handshake

THEY'RE not asking for any praise. They know the job they started out to do isn't finished by a long shot.

But just the same, it's no less than simple justice that the men who own and operate 86 per cent of all the trucks on our streets and highways should get some measure of credit right now for meeting and mastering what looked like a hopeless situation when the war began.

You remember how things were. Rubber supplies were cut off. New tires were restricted to vital wartime equipment. No new trucks were to be built for civilian requirements. The supply of truck repair parts was limited. Mechanics and drivers went into the armed services. Gasoline was rationed. And to top it all, a tremendous amount of special record-keeping had to be done.

What happened? Well it seems like a miracle now. But America's merchants and farmers, manufacturers and wholesalers, utilities companies and the operators of thousands of different businesses, all pitched in and faced the problem without flinching.

And they've solved it, they and their drivers, through voluntary programs of truck, tire and gasoline conservation that nobody would have thought feasible before war struck.

Yes, the war materials have been and are being delivered—the production of the farms has been getting to market—the whole national economy has been maintained on a remarkably even keel, despite war conditions, because America's private truck owners knew that it was vital to keep their motorized transportation on the job.

STUDEBAKER

PIONEER AND PACEMAKER IN AUTOMOTIVE PROGRESS

Now building Wright Cyclone engines for the Boeing Flying Fortress—heavy-duty Studebaker military trucks—the Army's new Weasel

CCJ NEWSCAST

IHC Sets Up Separate Motor Truck Branches

As an important step in its post-war planning, and also because of increasing activity in the truck field, International Harvester Co. has set up separate motor truck branches at several points where combination truck, farm equipment and industrial power branches formerly had been operated.

Such recently established truck branches according to P. V. Moulder, general manager of International Harvester's motor truck division, include Denver, Colo., I. A. Leimbrook, manager; Indianapolis, Ind., L. W. Hully, manager; Atlanta, Ga., C. S. DeWeese, manager, and Kansas City, Mo., Buford Mullin, manager.

The most recent of such changes, effective Oct. 26, is the establishment of a separate motor truck branch at Louisville, Ky., under the management of E. M. Ford, formerly assistant manager of the combination branch at that point.

Ford Dealer Committee a Factory-Owner Link

A committee of dealers to serve as a factory advisory group has been approved by the Ford Motor Co. and its regional managers.

Purpose of the committee will be to interpret to engineering and production divisions the requests of Ford owners, and to assist in formulating policies which will be used to govern both sales procedure and factory methods. The committee's function also will extend into the service division and to production of parts and accessories.

Each of the six regions in the United States will select three dealers as representatives to a central committee. These representatives will be chosen by the dealers themselves, and will not be appointed or recommended by regional managers. After selections are made by dealers, meeting in their various regions, the central committee of 18 members then will meet in Dearborn to discuss policy and production matters.

It is expected that this committee will bring dealers into closer touch with engineering and production executives who then will be able to translate general owner suggestions into a finished product.

Thomas Midgley, Jr., Dies

Thomas Midgley, Jr., who discovered the antiknock properties of tetraethyl lead, died suddenly at his home in Worthington, Ohio, on Nov. 2, 1944, at the age of 55.

Although Dr. Midgley had been an invalid for the past four years as a result of an attack of infantile paralysis, he was active up to the last as an officer of the Ethyl Corp. and Kinetic Chemicals, Inc.

Fred Poehner Dies

Fred L. Poehner died suddenly in his Washington, D. C., home on Nov. 12. For many years he was a salesman for the White Motor Co. He was connected with the Philadelphia branch before going with the Tank Truck Section of ODT. He was active in affairs of the Pennsylvania Motor Truck Association.

W. Franklin Donohoe Dies

W. Franklin Donohoe, director of sales of the Finishes Division, E. I. du Pont de Nemours & Co., died suddenly Nov. 10, in Chicago.

(TURN TO PAGE 78, PLEASE)

Robert A. Olen recently appointed general manager of FWD, succeeding his father, Walter A. Olen, who had resigned. The elder Olen was re-elected president and a director of the company

William P. Michell has been named assistant chief engineer of Mack Trucks, Inc. He recently returned from Great Britian where he had been serving in an advisory capacity on military truck transport at the invitation of the British government.

E. J. Martens has been appointed service engineer of the Marshall-Eclipse brake lining division of Bendix Aviation Corp., with headquarters in Detroit.

Robert Boyd Parker has been appointed assistant to the president, American Brake Shoe Co. His duties include sales research and coordination, and responsibility for liaison between the company's metallurgical and research laboratories and the sales and production staffs of its 59 plants.

Here a big Mack Bulldog carries a prefabricated boom tower overland from Allentown, Pa., to its place aboard ship at Philadelphia. The tower, an all-welded tubular structure, weighs 35 tons, is 58½ ft. long, 23 ft. wide and, when loaded, towered 17½ ft. off the road. State and city police, electric and telephone company maintenance crews cooperated in seeing the cumbersome section to its destination without incident

Announcing

HY-POWER

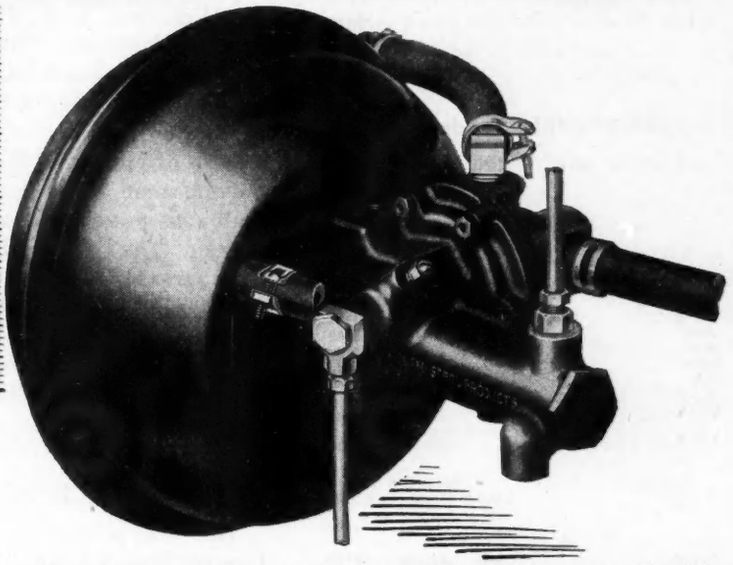
the newest development in

POWER BRAKES

HY-POWER

THE MIDLAND STEEL PRODUCTS CO. CLEVELAND, O. • DETROIT, MICH.

PATENTS PENDING



HY-POWER *Gives You Many Advantages . . .*

No lubrication

Simple in design, rugged in construction.

Reduces physical effort and gains added power.

No braking forces are applied to mounting brackets.

Simple to install. Can be located any available place on chassis.

Does not interfere with operation of the standard hydraulic system.

Complete in one assembly. No adjustments necessary when installing or during service. No units to align.

Sealed system. All moving parts completely enclosed. Protected from all atmospheric conditions. No mud, water, dust, dirt, rust or corrosion.

THREE time-tested features of Midland Power Brakes are combined in a single device in Midland's sensational new HY-POWER unit: vacuum diaphragm chamber—hydraulic vacuum valve—hydraulic slave cylinder. HY-POWER is a completely enclosed and simplified device providing surer, safer braking. HY-POWER is compact—easy to install—sealed against all weather and atmospheric conditions—offers direct applied power—less weight—no lubrication—long life. Write, wire or phone for detailed information, specifications and illustrated, descriptive folder.

THE MIDLAND STEEL PRODUCTS CO.

10605 MADISON AVE. • CLEVELAND 1, OHIO

Export Department: 38 Pearl Street, New York City

MIDLAND POWER BRAKES

CCJ NEWSCAST

(CONTINUED FROM PAGE 76)

De Kalb Body Completing Postwar Requirements Survey

An aggressive program of development to meet needs of truck fleet owners within the immediate postwar period is now under way at the De Kalb Commercial Body Corp. plant at De Kalb, Ill.

De Kalb intends to use plant facilities expanded by the war effort to put into operation extensive plans for truck fleet owners in several industries such as dairies, bakeries, department stores and others. A survey, now being completed, was undertaken to determine the exact requirements of the various businesses.

1944 Monthly Production of Trucks and Truck Tractors*

1944	Civilian	Military	Total
LIGHT Under 9,000 Lbs. GVW			
January	.....	21,479	21,479
February	.....	21,095	21,095
March	.....	21,081	21,081
April	.....	19,481	19,481
May	.....	19,338	19,338
June	.....	20,830	20,830
July	.....	20,269	20,269
August	.....	23,441	23,441
September	.....	21,387p	21,387p
Total—9 months	.....	188,381	188,381
MEDIUM 9,000 to 16,000 Lbs. GVW			
January	1,995	12,806	14,791
February	1,798	9,940	11,738
March	3,317	8,303	11,620
April	6,245	6,649	12,894
May	7,310	7,007	14,317
June	9,319	6,625	15,944
July	8,582	6,031	14,613
August	10,248r	5,746r	15,994r
September	10,032p	6,300p	16,332p
Total—9 months	58,836	69,407	128,243
HEAVY 16,000 Lbs. GVW and Over			
January	543	21,783	22,326
February	968	21,870	22,838
March	1,311	22,347	23,658
April	1,906	21,438	23,344
May	1,988	21,277	23,265
June	2,607	21,805	24,412
July	2,661	23,997	26,658
August	2,263r	26,847r	29,110r
September	2,069p	25,098p	27,167p
Total—9 months	16,316	206,462	222,778
TOTAL—ALL WEIGHTS			
January	2,528	56,068	58,596
February	2,766	52,905	55,671
March	4,628	51,731	56,359
April	8,151	47,568	55,719
May	9,298	47,622	56,920
June	11,926	49,260	61,186
July	11,243	50,297	61,540
August	12,511r	56,034r	68,545r
September	12,101p	52,765p	64,866p
Total—9 months	75,152	464,250	539,402

r—Revised
p—Preliminary

* Automotive Division—W.P.B.

Topics of Fleet Interest at SAE Annual Meeting

The S.A.E. War Engineering Annual Meeting will be held Jan. 8-12, 1945, at the Book-Cadillac Hotel, Detroit, Mich. Of special interest to fleet operators will be the following papers:

"Cold Starting and Fleet Operation," by E. P. Gohn, Atlantic Refining Co.; "Water-Alcohol Injection for Spark Ignition Engines," by A. T. Colwell, Thompson Products Inc.; "Possibilities of Multiple Power Plants in Buses," by F. R. Fageol, Twin Coach Co.; "Possibilities of Multiple Power Plants in Trucks," by Ralph Werner, United Parcel Service; "Power Steering for Automotive Vehicles," by F. W. Davis, Consulting Engineer; "Piston Lacquering, Its Causes and Cure," by H. C. Mougey, Research Lab. Div., General Motors Corp.

Also of interest to fleetmen will be a symposium based on consumer reaction to present automobile bodies entitled "The Practical Postwar Car." John Oswald, of General Motors, will speak on "The Difficulties of Long-Time Ownership of Passenger Cars," and C. F. Kettering, also of General Motors, will discuss "Fuels and Engines for Higher Power and Better Efficiency."

Rowland Branch Moved

The new address of the Wm. & Harvey Rowland, Inc., Philadelphia wholesale branch is 1414 Fairmount Ave.

PERSONNEL CHANGES

Earl C. Gilmore, former sales manager of the Body and Hoist Division of the Heil Co., has been advanced to assistant treasurer.

The Kingham Trailer Co., Inc., of Louisville, Ky., has announced the appointment of Thomas A. Donnelly of Steubenville, Ohio, as special sales representative with headquarters at the Kingham factory in Louisville. Mr. Donnelly sold trucks, tractors, and equipment in Ohio and Pennsylvania for 14 years. For the past six years he has been connected with the transportation industry in the capacities of president and general manager for transportation lines covering Pennsylvania, West Virginia, Ohio, and Kentucky.

E. G. Jacobs, general manager of the L. J. Miley Co., Inc., has announced that in the future Miley will be represented in Minnesota, North Dakota, South Dakota, and Western Wisconsin by John J. Junkin of Minneapolis, who has handled automotive supplies in that area for many years. John J. (Jack) Junkin, Jr., who has recently returned from service in the U. S. Navy, will assist his dad in handling the territory for Miley.

(TURN TO PAGE 174, PLEASE)

Special, personal recognition for successful administration of fleet safety programs has been accorded by The Electric Auto-Lite Co. to safety directors of 11 fleet winners in the 1944 National Truck Safety Contest sponsored by the American Trucking Associations, Inc. This photograph shows a typical presentation of the Auto-Lite award, a combination desk set, hygrometer and barometer. Similar presentations are being made in 10 states. Shown in the picture are: Joseph Kadens, ICC Bureau of Motor Carriers; award recipient Jack R. Lewis, director of safety and personnel, The Davidson Transfer & Storage Co., Baltimore; George L. Teets, eastern division fleet supervisor, The Electric Auto-Lite Co.; Captain R. M. Ridgely, Maryland State Police. The presentation took place in the presence of the Highway Safety Luncheon Club, Baltimore, Md.

How to get acquainted with "Jim"*

YOUR NEIGHBOR WHO KNOWS HOW TO STYLE TRUCK BODIES *TO YOUR EXACT REQUIREMENTS

Representing a new idea in truck body distribution, Ls "Jim" offers the advantages of both mass production and local, personalized service. Knowing local conditions and regulations thoroughly, he can develop a body to meet your exact needs—unhampered by shipping problems, he makes deliveries or does a factory job of repairs overnight.

You'll find "Jim," your nearest Ls body builder, listed below. Get in touch with him or write to **Lindsay and Lindsay, Adams-Franklin Building, Chicago 6, Illinois; or to 60 East 42nd Street, New York 17, New York. Lindsay Structure (Canada), Ltd., Dominion Square Building, Montreal.**

Lindsay Structure
Truck Body Distributors and Dealers

ALABAMA—Cruse-Crawford Bus & Equip. Co. Birmingham
Betbeze Spring Service, Inc., Mobile
Hodo & Vandigriff, Montgomery
CALIFORNIA—Norman S. Wright & Co., Los Angeles
Yankee Motor Bodies Corp., Los Angeles
Earl Sherman & Co., Oakland
Norman S. Wright & Co., San Francisco
DISTRICT OF COLUMBIA—Ray B. Roberts, Washington
Watson Automotive Equip. Co., Washington
FLORIDA—Miller Sales, Inc., Bradenton
Fyfe Body Works, Tampa
GEORGIA—Armor Insulating Co., Atlanta
Carley Trailer & Equip. Co., College Park
IDAHO—The Olson Manufacturing Co., Boise
ILLINOIS—Erlinder-Platt Corp., Chicago
INDIANA—Hercules Body Co., Inc., Evansville
IOWA—Farmers Lumber & Supply Co., Sioux City
LOUISIANA—City Auto & Body Co., Inc., New Orleans
MAINE—Wade & Dunton Motors, Inc., Lewiston
MARYLAND—Watson Automotive Equip. Co., Baltimore
MASSACHUSETTS—Frank E. Snow, Inc., Lawrence
MICHIGAN—National Body Corp., Detroit
Daleiden Auto Body Shop, Kalamazoo
MINNESOTA—Mahle Auto Body Co., Inc., St. Paul
Ebenhoh Body Shops, Sleepy Eye
MISSISSIPPI—A. P. Lindsey, Jackson
MISSOURI—American Body and Equip. Co., Kansas City
John J. Powers, St. Louis
NEBRASKA—R. P. Olsen & Son, Omaha
NEW JERSEY—Cliffside Body Corp., Cliffside Park
John Van Den Berg & Sons, Inc., Hawthorne
Peter Wendel & Sons, Inc., Irvington
Truck Body Industries, Inc., Newark
NEW YORK—Boulevard Comm'l Body Bldrs., Inc., Bronx
Masin & Kriz, Inc., Bronx
Franklin Body & Equip. Corp., Brooklyn
John Koerner Sons, Inc., Brooklyn
A. Praeger & Son, Brooklyn
Frank P. Schmitt & Co., Brooklyn
Watkins Body Corp., Buffalo
Peter McAvoy & Son, Inc., New Rochelle
L. Koss & Sons, Inc., New York
John Kreeb's Sons Auto Body Wks., New York
Lewisohn Sales Company, New York
Service Wagon Repair Co., Inc., New York
Truck & Trailer Industries, New York
Diehl & Sons, Inc., Richmond Hill
Plaza Auto Body Co., Woodside, L. I.
N. CAROLINA—Baker Equipment Engineering Co., Charlotte
OHIO—Finn Auto Body Co., Cincinnati
The Carnegie Body Co., Cleveland
Hercules Body Sales Co., Columbus
The Orrville Body Co., Orrville
Middlekauff, Inc., Toledo
OREGON—Transport Bodies, Inc., Portland
Norman S. Wright & Co., Portland
PENNSYLVANIA—W. J. Thiele & Son, Johnstown
H. Bahrenberg & Son, McKeesport
Barry & Baily Co., Philadelphia
Auto Truck Equip. Co., Pittsburgh
R. E. Wallace Shop, Wilkes-Barre
RHODE ISLAND—Providence Body Co., Providence
S. CAROLINA—Rock Hill Body Company, Rock Hill
SOUTH DAKOTA—Acme Machine & Body Co., Sioux Falls
TENNESSEE—A. Fassnacht & Sons, Chattanooga
Post & Company, Inc., Knoxville
Southern Truck Equip. Co., Memphis
Tennessee Truck Service, Nashville
UTAH—Williamsen Auto Body Co., Ogden
VIRGINIA—Baker Equipment Engineering Co., Richmond
Mason Manufacturing Co., Newport News
WASHINGTON—Geo. Heiser Body Co., Seattle
Washington Auto Carriage, Spokane
Norman S. Wright & Co., Seattle
W. VIRGINIA—Baker Equipment Engineering Co., Inc., Charleston
WISCONSIN—Auto Body Works, Inc., Appleton
Albert Abraham, Milwaukee

LINDSAY STRUCTURE

Ls
REG. U. S. PAT. OFF.

U. S. Patents 2017629, 2265310, 2263511
U.S. and Foreign Patents and Patents Pending

Lindsay Structure utilizes all the strength of light metal sheets through uniform tensioning.

DISTRIBUTORS AND DEALERS THROUGHOUT THE COUNTRY

United Parcel Stops Body & Fender Damage

(CONTINUED FROM PAGE 56)

men. They talk with people in all kinds of businesses and they come up with many good suggestions with sound ideas, that helped to keep the cars rolling.

No New Tires Since War

Our company has had tires recapped as far back as 15 years. We, in Chicago, have not bought a new tire since the war began, and recapping has played the chief part in that result. Due to the fact that we inspect our tires daily, we can recap many casings three and four times.

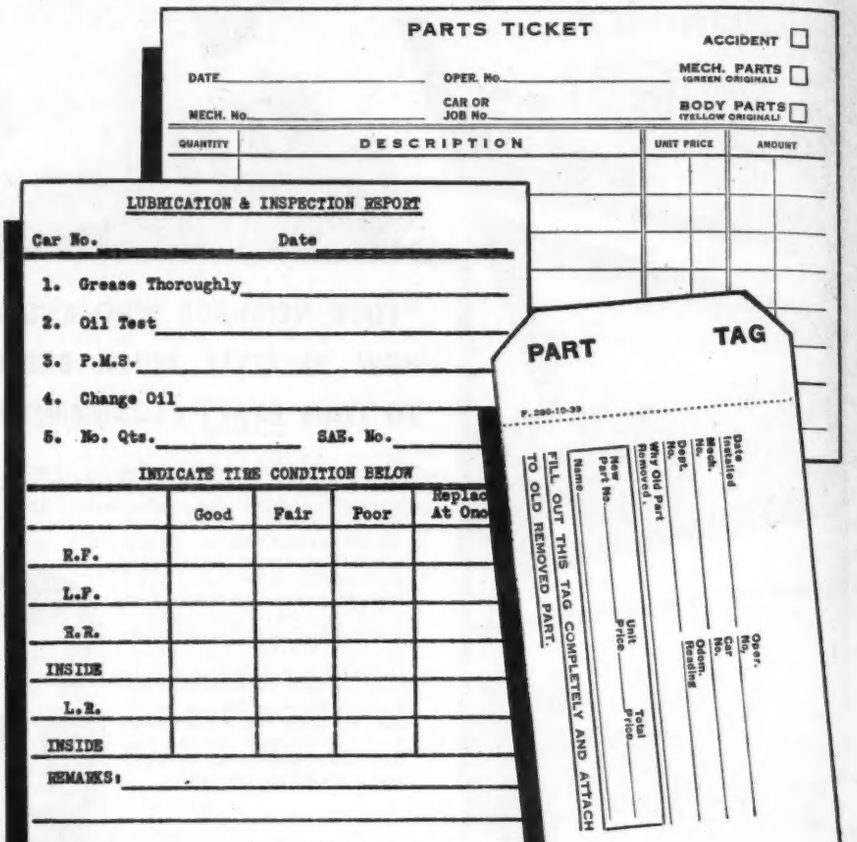
Moreover, as soon as a tire wears smooth, we take it off for a new recap, which lasts as long as the original rubber per tread. We keep complete mileage records of all tires. Each tire has a truck number, and we can tell even the serial number on each tire from a card system which shows the complete case history of the tire until it is finally discarded.

Another factor which has enabled us, here, to go through the war period without buying a new tire, was our long term pre-war experience in saving casings for recaps.

First we recap tires for safety; second, for economy. We emphasize safety, as a smooth tire is unsafe—causes more mishaps than flats.

When the war restrictions created the acute tire shortage, we made a survey of our tires on the fleet, and had all smooth ones taken off and recapped. Then, with constant and close observation, we found we could get even more good miles out of our tires than ever before. In a set-up like ours, where most of our deliveries are in a heavily populated area, extra care must be used to avoid curb rubbing, which could soon render a casing unfit for recapping.

Frequent stops and starts wear off the treads faster, but by having all tires inflated regularly and inspected daily by station managers, and with inspections for road hazards made by mechanics, a high percentage of carcasses can be saved for multiple recaps. The last-named inspections include glass particles, nails and other foreign substances. All such are carefully removed to prevent further injury to the treads and carcasses.



Just how these forms are used for reducing road calls and keeping the UPS fleet in top condition is explained by the author in the article

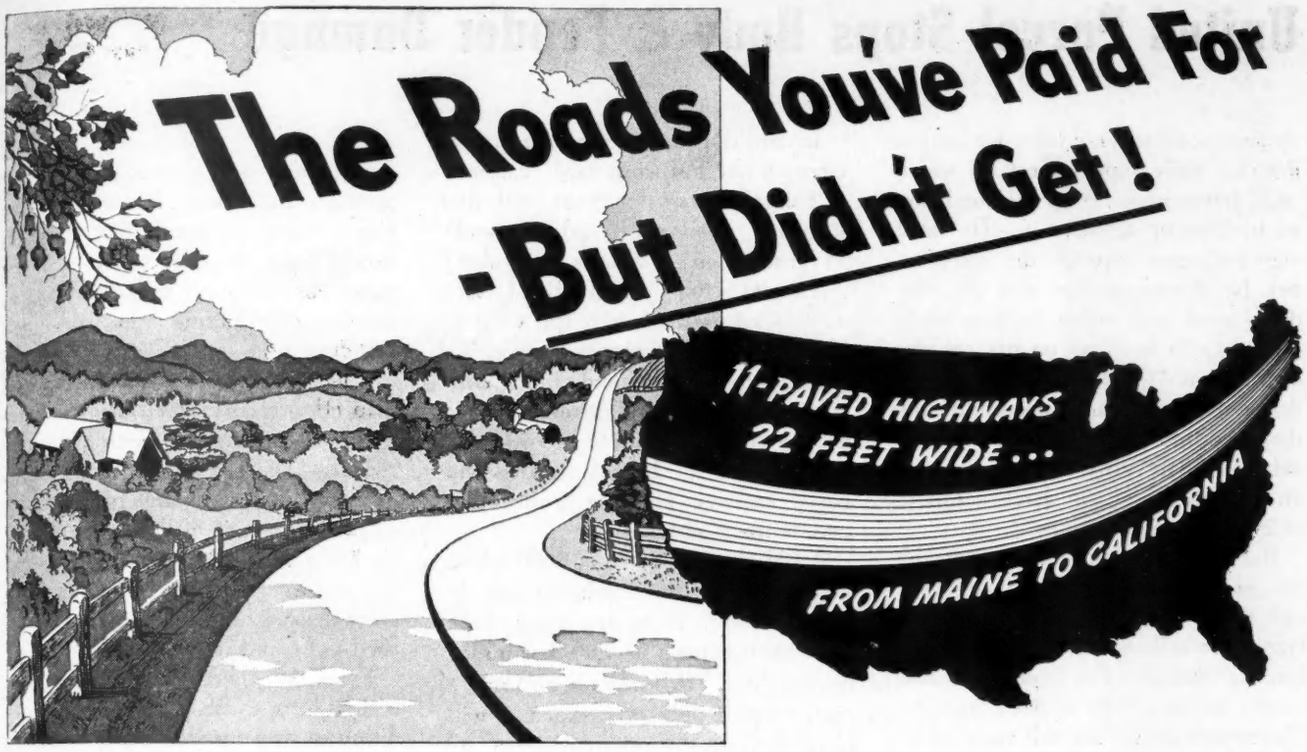
Reducing Road Calls

Our road calls in August of 1944 are typical of this end of our service. In that month we had 20 road calls which involved 28 hours, or 1.4 hours per call. This included two ignition jobs and six flat tires.

In order to keep these road calls to a minimum and to facilitate the

(TURN TO PAGE 82, PLEASE)

The Roads You've Paid For -But Didn't Get!



TAXES USED *for Other Purposes*

When you start talking figures these days, a sum like $1,555,002,000 doesn't sound so big. But, you may be surprised to hear that this amount would pave eleven 22-foot concrete highways from Maine to California!

This 1½ billion dollars is the total of your **highway tax money** which was allocated by State agencies for purposes **other than road building and upkeep** from 1934 through 1942.

Just think of the new highways which **could have been built . . .** the narrow pavements which **could have been widened . . .** the grade separations and other safety improvements which **could have been paid for with this sum!**

FUNDS *Raided*

But, instead, these billion and a half dollars have been allocated to financing unemployment . . . relief costs . . . and other miscellaneous purposes which are entirely foreign to highway construction and maintenance.

No one will argue, perhaps, that some of the projects this money supported were not worthy, but the fact remains that **the taxes you pay for the use of the highways should be expended solely for highways!**

ARE YOUR HIGHWAY TAXES *Too High?*

Since you and all other highway users have paid more than a billion and a half dollars for roads you didn't get, doesn't it seem logical to assume that either — **(1) the taxes on all motor vehicles are too high, or (2) highway building, maintenance and safety programs are being sacrificed?**

15 STATES *Protect* THE TAXPAYERS

To date, 15 States have put a stop to this dipping into highway tax money for unrelated purposes by passing constitutional amendments outlawing such action. Perhaps you live in one of these States . . . California, Colorado, Idaho, Iowa, Kansas, Michigan, Maine, Minnesota, Missouri, Nevada, New Hampshire, North Dakota, Oregon, South Dakota or West Virginia. Kentucky, Nebraska and Washington are expected to join this group.

HOW TO GET THE HIGHWAYS *You Pay For!*

However, if you live in any of the other 30 States (except Louisiana, Kentucky and Iowa) your State Legislature will meet in regular session early in 1945. This, then, is the time to insist that your Legislators take action to safeguard *your* highway tax money. Such action will guarantee either — **(1) better and safer highways, or (2) a reduction in your highway taxes.**

World's Largest Builders of Truck-Trailers *Service in Principal Cities*

FRUEHAUF TRAILER COMPANY • DETROIT 32

United Parcel Stops Body & Fender Damage

Continued from Page 80

various road service jobs, we keep a driver's daily report sheet on which each driver must report the condition of his car or approve it. He must sign his name opposite the car number he drives, at the end of each day's work, and either indicate work necessary to be done on his vehicle, or mark it "O.K." This procedure definitely places the responsibility for the condition of his vehicle where it belongs. The instruction is printed on the bottom of the driver's report to insure its application.

But this report is only a part of the program. We also have road-call forms that are filled out. I analyze these calls to determine the reason for the call. For example, a call comes in reporting a dead battery. The report shows the call came in at 10:25 a. m. At 10:30 the service man was on his way. He was on the job at 11:00 a. m. He finished at 11:30, and checked in at noon. The total elapsed time is marked down and the driver signs it. He then writes on the back of sheet the condition of the car.

On another road call, the driver reported a broken starter bendix. This call came in at 11:00 a. m. At noon it was finished. At 12:30 he was back in the shop. Actual work was done in 30 minutes, or a total elapsed time of 1½ hours. Having the replacement part on hand saved delay and got the unit back into service quickly.

These reports and records pay dividends. They enable us to analyze the nature of trouble and eliminate causes. For example, if we should have a run on battery trouble, we may find it is because we have been using inferior quality or type of battery. Therefore, $5 or $6 more spent for a better battery would eliminate this trouble. Let's say the total cost of the battery road call is $10, it would not take long to save the difference between a good battery and a poor one.

This system also tells us whether the type of work we are doing is satisfactory, or if it can be improved upon. If our PM program keeps our road calls to a minimum, we know our men are doing good work.

In addition to the nine major services on our PM work card (Engine) (Cooling System) (Front end and steering) (Driveshaft and rear end) (Transmission) (Wheels & Brakes) (General) (Body) and (Road test) as detailed on the work card, we definitely inspect all batteries weekly. We check for charging and apply anti-corrosive paste to all terminals. We keep a complete battery record on a special card for battery service and costs, entirely separate from other maintenance services.

A PM check is given at 3000 miles, and we figure the mechanic can do one of these jobs in first class shape in about 6 hours with no other major overhauling. However, if he finds a major repair necessary, that fact will be written on the repair order to be done later.

When these services have been finished, the records are returned to the stockroom. I keep a separate file for each vehicle and, checking from these cards, I can determine when the truck was previously worked on in the shop, and when it should come up again for a PM job.

Mechanics keep their own time on green, blue, yellow and pink slips to classify their work and various kinds of services done. To illustrate, for general mechanical work, he uses a green slip. A yellow slip for body work, pink for painting, blue for garage, and white for non-productive. Each mechanic fills these in every night himself, so we get the exact cost on each individual truck, besides determining what the man has done each day.

There is a separate lubrication and inspection report which also includes a tire inspection job with the same report. The stockroom man checks greasing, oil test, change of crankcase oil but does not even see the truck. He has a big book on which is posted the mileage, number of gallons of gasoline and number of quarts of oil used daily and the SAE rating.

From this chart the stockman, who issues all tires, can determine the condition of tires on said truck from the notations "Good" "Fair" or "Poor."

A card for each tire in the inventory shows the make and serial number. He keeps each unit in the inventory until it goes into use, then it is kept in a running fleet file. A power tire spreader is used to inspect casings for breaks, and is found helpful in speeding up the job of inserting tubes for mounting.

Every replacement part is tagged for quick identification and access when needed on a repair job, and is kept tagged until it is installed. This tag then is dated as to when the part was installed, the operation number, mechanic's number, car number, department number, odometer reading and why old part was removed. The new part number is put on the tag, then the unit price and total price, after which it is signed by the stock man and attached to the removed old part.

As good appearance of our equipment plays a vital part in our type of package delivery service for department stores and exclusive specialty shops, all units are kept well painted, washed and polished. This factor alone is worth its cost in driver morale, and inspires the drivers to keep their vehicles looking nice. Drivers like a nice looking truck that runs well.

END

(Please resume your reading on P. 57)

Participating in the WMC's All-Out-for-Victory drive to secure 20,000 additional workers for Chicago's critical plants, and in charge of a young lady whose husband and three brothers are overseas, this Diamond T carried this message: "Since you went away—Diamond T has delivered tens of thousands of vital military vehicles to our armies in all parts of the world. This is the tank hauler and tank recovery tractor which handles a gross train load of 160,000 lbs." Powered by a 200-hp. Diamond T Hercules Diesel engine, this tractor wears 10 dual 12:00-20 tires, while its trailer uses 16 more tires of the same size.

Engineering
Forty-one years' specialization has given the Long organization an unusual background of experience in heat exchange unit engineering and manufacture. War accelerated new developments, many new applications, and added substantially to our knowledge of the field. This engineering and manufacturing experience will be turned back to peacetime production when peace comes.
LONG MANUFACTURING DIVISION
BORG-WARNER CORPORATION
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CLUTCHES • RADIATORS • OIL COOLERS

HANSEN
HARDWARE for all Commercial Bodies
The HANSEN HANDLE
OPENS LIKE THIS...CLOSES FLUSH LIKE THIS
THAT HAS MADE HISTORY
Illustrated above—No. 79-L FLUSH HANDLE Dimensions, 6 3/16" wide. Recess, 4½" wide, ½" deep. Shank, 3⅛" long, 5/16" dia. Flange, ¾". Wt. 1 lb. 2 ozs. Other styles and sizes of Flush Handles available.
FITS flush with doors and body. Pulls out when in use—folds in when not in use. No projections to take up valuable load width, catch clothing or obstruct free movement of truck in limited space. Turns freely in circular cup, giving full play to handle and hand without danger of bruising or barking knuckles. Applied to metal or wood doors. Made in wide and narrow-flange types, in widths up to 6 3/16". Used on tanks, trucks, trailers and cabs. On them all it has made history.
Besides Flush Handles, the Hansen line includes Locks (Slamming, Slam-and-Take-up, Rotary, Refrigerator, Sliding Door, Cab)—Hinges (Leaf, Plain, Square—and Round-Corner)—Window Regulators (Straight-lift and Balanced types)—also various types and sizes of one-hand automatic Tackers for driving Hansen Tack-points and T-head Tacks up to ½" length. What are your requirements?
A. L. HANSEN MFG. CO.
5047 RAVENSWOOD AVE. CHICAGO 40 ILL.

ODT Invites Operators to Apply for 1945 Output

Applications for certificates of transfer for the purchase of new commercial motor vehicles to be built during 1945 may now be made to ODT district offices.

The ODT points out that it desires to notify manufacturers of heavy-duty trucks of the name and address of successful applicants 60 days in advance of production so that these vehicles may be shipped into the areas where certificates of transfer have been approved.

Since the entire 1944 production of heavy-duty trucks has been allocated on a few makes and models, the ODT explains all certificates of transfer issued by the allocation section where 1944 production schedules have been exhausted will have an expiration date of three months from the date of issuance. On all makes and models where the production schedules have not been exhausted and trucks are either presently in dealers' or branch stocks or are to be manufactured, certificates of transfer will have an expiration date of Dec. 31, 1944. Certificates of transfer for medium trucks for the remainder of 1944 will also expire Dec. 31, 1944.

Because no light trucks will be manufactured before February, 1945, the ODT has informed its district offices that they may accept and forward to the allocation section light truck applications beginning Jan. 1, 1945. In the meantime, applicants for light trucks will continue to submit a letter from their dealer stating that the truck is available in his stock, giving make, model and serial number and a statement that no certificate of transfer or government exemption permit is held against it.

Trailers will be handled the same as heavy-duty truck applications.

The ODT also announced that effective Nov. 13, persons or companies granted certificates of transfer will not have to present these forms to motor vehicle registrars for licensing purposes.

Three New Forms for Gasoline Rationing

The new forms to be used by commercial motor vehicle operators when applying for their motor fuel allot-

(TURN TO PAGE 87, PLEASE)

ODT-OPA-WPB NEWS

(CONTINUED FROM PAGE 84)

ments under the recently revised rationing procedure are now available at all OPA District Offices and local War Price and Rationing Boards. These forms are:

OPA Form R-597—to be used when application is being made for additional gasoline as a result of a *temporary* change in requirements within any quarterly period;

OPA Form R-596—(a post card form) to be used when applying for the renewal of regular quarterly transport rations;

ODT Form CWN-1—Revised 9/44—to be used in making application for an ODT Certificate of War Necessity or for a *permanent* change in mileage-motor fuel allotment for commercial motor vehicles. (This form is to be submitted to ODT District Offices and copies also are available there.)

Light Naphtha Rationed

Effective Nov. 20 light naphtha was brought under OPA rationing control in 15 mid-western states, in order to put a stop to the illegal use of this product as a motor fuel which, according to OPA, has been prevalent in parts of this territory. The states affected are Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee and Wisconsin.

The heavier industrial naphthas are to remain free from rationing.

OPA Extends Validity of Car Ration Certificates

OPA's passenger automobile rationing regulations have been amended to extend the validity period of car ration certificates from 15 to 60 days. By the terms of Amendment 16 to OPA Ration Order 2B, certificates valid on Nov. 3 remain valid through Nov. 30, 1944, and those issued on and after Nov. 4 will be valid for 60 days. All certificates expire at the end of their validity period and are not renewable.

Also as an aid to certificate holders in locating cars, the amended regulation requires all automobile dealers to post current inventory lists of 1942 cars held for sale. Dealers who refuse to sell a car to a prospective purchaser who has the cash and necessary papers may be barred from dealing in any cars now rationed or that may be rationed in the future, OPA has declared.

Any certificate holder who experiences difficulty in locating a new car for sale may receive assistance in locating a suitable car by addressing the OPA, Inventory and Control Branch, Empire State Bldg., New York 1, N. Y.

Butyl for Truck Tubes

The Rubber Bureau of the War Production Board has permitted consumption of butyl in the manufacture of truck and bus tubes, size 8.25-16 through 9.00-24 inclusive, for both Government and civilian orders. Tire engineers consider butyl tubes better than those made of natural rubber.

Winterproof
IGNITION
NOW!
with NIEHOFF
APPROVED QUALITY PRODUCTS

Where ignition units are beyond servicing, replace with NIEHOFF Approved Quality Products that protect the battery, conserve gas and oil, assure quicker starting and new car performance. NIEHOFF Ignition Parts are available through a national network of NIEHOFF Jobbers.

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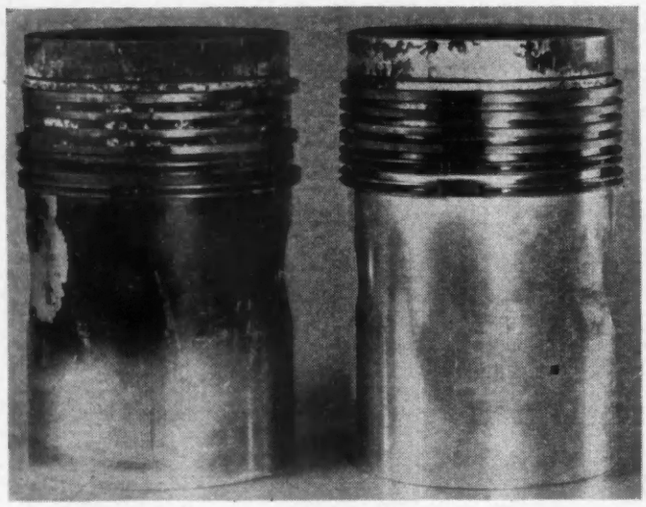
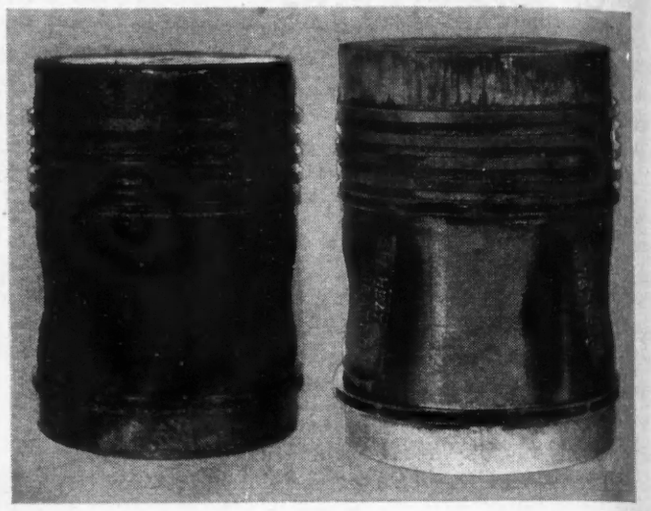
BUY
WAR BONDS

CARE WILL SAVE YOUR TRUCK



These pistons were removed from diesel engines after test of straight and heavy duty oils covering 80-hr. runs. Piston at left was removed from the engine using SAE 30, straight mineral oil. At right is reproduced another piston from an identical 80-hr. test using an SAE 30, heavy duty oil



Two diesel engine pistons after 480-hr. test runs. Piston at left was removed from engine using conventionally refined SAE 30 straight mineral oil. Piston at right was removed from engine using a solvent extracted, high viscosity index oil, SAE 30, containing inhibitor and "detergent" additives

The Cleansing Effect of "Detergent Oil"

Compounded Oils Tops in Navy Tests

"Approximately 75 per cent of the heavy-duty oils tested at the Engineering Experiment Station have shown results better than for straight mineral oils.

"Heavy-duty oils submitted for test over the past three and one-half years have not, in general, shown sufficiently noticeable improvements. However, there have been five oils submitted periodically over the three and one-half year period which have shown outstanding results. The improvements, therefore, may be attributed to certain individual companies rather than to the oil industry as a whole."—A. D. Brabbs, Lieut. U.S.N.R., U.S.N. Engineering Experiment Station, Annapolis, Md., in paper delivered at SAE National Fuel and Lubricants Meeting.

(CONTINUED FROM PAGE 41)

size that heavy-duty oils are not intended as cleaning or purging agents, even though the popular name "detergent oil" might imply this function.

The study of detergency versus dispersancy included a series of road tests. A variety of truck engines in different types of service and which had become quite badly fouled with sludge and deposits from operation with straight mineral oils, were run from 1000 to 10,000 miles with heavy-duty oils. In each case, the engine was opened up at the start of the test for observation of deposit condition. Deposits were not removed or disturbed. In each test at least three drains and refills with heavy-duty oils were made and at the conclusion of each test the engine was again opened up for observation.

The photograph in Fig. 1 shows two pistons from light truck engines operated in city delivery service wherein considerable difficulty with cold engine contamination sludges was encountered. The left hand piston is typical of that found in several of the engines in this fleet after some months of operation with straight mineral oil. As indicated, oil ring fouling was prevalent and the piston skirts were coated with quite heavy deposits. The oil ring deposits were of a soft, pasty nature and consisted chiefly of lead compounds and soot. The piston skirt deposits also contained considerable lead residues bonded to the skirts by sticky oil oxidation resins. Although these skirt deposits were fairly heavy, in no instance were they found to have developed to the point of causing piston sticking in the cylinder bores.

The right hand piston in Fig. 1 is typical of those from engines in this fleet after operation for 1000 to 2000 miles with heavy-duty oils. There was a noticeable improvement in oil ring condition and appreciable reduction of piston skirt deposits. The heavy-duty oils used thus displayed fairly effective detergent action in removing soft, pasty deposits from the pistons.

Fig. 2 shows push rod cover plates from engines in this same fleet. The upper plate is typical of that from engines after operation with straight mineral oil. Heavy, rather hard and adherent deposits composed chiefly of lead compounds were prevalent. The lower cover plate is typical of the condition found after 1000 to 2000 miles operation with heavy-duty oils. As shown, there was practically no change in the deposits and little or no evidence of removal by the heavy-duty oils.

The general experience in this test

(TURN TO PAGE 90, PLEASE)

The Power Braking Unit of the Future . .

. . Backed by a Brilliant Past!

COMPARE

It's *Simple*—a single, compact unit . . . *Easy to Install*—requires only 3 tubular connections . . . *Mounts anywhere* on the chassis . . . *Trouble-free*—completely enclosed, no external levers or links, no adjustment during or after installation . . . *Increases Safety*—delivers great power at a pedal touch, lets driver "feel" the brakes.

Hydrovac

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Bendix

Available now!

Tested in battle all over the world . . . combining more vital advantages than any other power braking unit . . . and available right now to qualified users, this great product from Brake Headquarters deserves a thorough investigation if you own, sell, or service hauling equipment. See your Bendix B-K dealer or write direct to the factory for details and prove for yourself that there's nothing in its field like Hydrovac power braking—nothing else so advanced, so efficient, and so thoroughly proved.

BENDIX PRODUCTS DIVISION OF BENDIX AVIATION CORPORATION • SOUTH BEND 20, INDIANA

"HYDROVAC" AND "BENDIX" ARE TRADE-MARKS OF BENDIX AVIATION CORPORATION

THE CLEANSING EFFECT OF "DETERGENT OIL"

(CONTINUED FROM PAGE 88)

series was that such engine parts as oil rings, pistons skirt, crankcases and lower engine surfaces were appreciably cleaned and freed of soft, pasty, contamination sludges by the heavy-duty oils. On the other hand, engine sections such as valve chambers and push rod and rocker arm compartments, where oil flow was limited and where the deposits tended to be of a harder more adherent type, were not appreciably cleaned or benefited by the heavy-duty oils.

Peculiarly enough, in all cases where oil pump screens were found to be heavily coated with deposits, the heavy-duty oils displayed little or no cleaning action, in spite of the vigorous oil flow at this point in an engine. In most instances oil screen deposits were packed to a hard, adherent and granular coating which was not susceptible to removal. In several instances the oil screens were found to be dirtier and more heavily plugged after the runs with heavy-duty oil than before. In such cases, sludges loosened from other parts of the engine were apparently carried to the oil screen thereby increasing the deposits.

Fig. 3 shows two typical pistons from a heavy-load, long-haul fleet operation. With straight mineral oils, considerable difficulty with ring sticking and oil ring plugging was encountered, although the balance of the engine interiors remained reasonably clean and free of excessive deposits between overhaul periods. Typical engine service in this fleet apparently accentuated oil deterioration from high piston temperatures, while oxidation of the bulk oil in the crankcase or excessive oil contamination from low engine temperatures was not an appreciable factor.

The left hand piston in Fig. 3 is typical of those found in engines in this fleet after 20,000 to 40,000 miles operation with uncompounded oil. Compression rings showed partial to complete sticking, the oil rings were badly fouled with hard carbon deposits, and the inner and outer piston surfaces were coated with baked varnish films. These pistons deposits apparently originated as oil oxidation sludges which built up on the pistons and then baked to hard, adherent varnish films and coke-like or carbonaceous deposits in the ring grooves and oil ring slots.

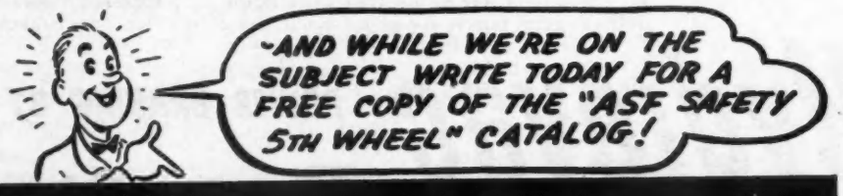
The piston on the right in Fig. 3 is typical of that from engines after 5000 to 10,000 miles of operation with heavy-duty oils. As shown, no appreciable removal of deposits resulted from the use of the additive treated oils. This experience confirms that reported previously, that heavy-duty oils possess little cleansing or loosening action on deposits of a hard, adherent or baked character.

Another interesting and significant condition related to oil detergency was observed during the course of the road tests. In two instances addition of heavy-duty oil to badly fouled engines resulted in such disruption of oil circulation and loss of oil pressure that the engines had to be shut down to avoid possible damage from lack of lubrication.

In the one instance, a diesel engine in fluctuating load operation

(TURN TO PAGE 92, PLEASE)

"ALL HE WANTS TO DO IS TALK ABOUT THE NEW ASF ON HIS TRACTOR-TRAILER UNIT."



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Automotive Division
AMERICAN STEEL FOUNDRIES
400 NORTH MICHIGAN AVE, CHICAGO 11, ILL.

For peak performance by every engine in your fleet

26 basic designs

not 2 . . .
not 6 . . .
but 26

To enable you to insure that every engine in your fleet will give peak performance, the rings in Sealed Power Individually Engineered Sets are selected from 26 basic designs. Each set is specifically engineered to do the best possible job in a particular engine. Sealed Power has been refining these sets over five years—has been producing rings for car, truck and engine manufacturers 33 years. For best results, re-power with Sealed Power motor parts. Sealed Power Corporation, Muskegon, Michigan and Windsor, Ontario.

Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves, Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts.

BUY MORE WAR BONDS!

INDIVIDUALLY

ENGINEERED

SEALED POWER PISTON RINGS

BEST IN NEW TRUCKS! BEST IN OLD TRUCKS!

THE CLEANSING EFFECT OF "DETERGENT OIL"

(CONTINUED FROM PAGE 90)

had become badly fouled with mayonnaise-like deposits composed largely of soot and carbon particles. Within a few hours after addition of the heavy-duty oil, the oil pressure began to fluctuate from the normal 40 to 50 lbs. to almost zero so the engine was shut down. Upon inspection, it was found that considerable of the soft sludges had been loosened from the crankcase and lower engine surfaces. The large amount of solids which then became dispersed in the oil caused it to become extremely thick and viscous. Also, numerous lumps of sludge which had become loosened, but not thoroughly broken up and dispersed, had been carried to the pump oil screen, plugging it completely.

In the second instance, a gasoline engine had become heavily coated with oil oxidation sludges from extended operation with an unstable type of straight mineral oil. Some of the deposits were of a grease-like consistency but there was also considerable granular material of the "coffee-grounds" type. Shortly after the addition of the first charge of heavy-duty oil, loss of oil pressure was noted. As in the previous example, the heavy-duty oil had loosened up considerable of the sludges from the lower engine surfaces and although the soft sludges were dispersed in the oil, the granular, "coffee-grounds" were carried to the oil screen and pump intake, causing almost complete plugging and cessation of oil flow.

In both of these experiences, it was fortunate that loss of oil pressure was noted in time so that the engines could be shut down, otherwise serious engine damage would most probably have resulted.

END

(Please resume your reading on P. 42)

Specify
BLOOD BROTHERS UNIVERSAL JOINTS

Backed by over 30 years' Factory and Field Experience

Whatever your requirements, if your problem is to transmit power at an angle, our field and factory experience of more than 30 years is at your command. Our Engineering Department will gladly submit quotations covering your requirements.

BLOOD BROTHERS MACHINE COMPANY
Division of Standard Spring Company
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Blood Brothers
UNIVERSAL JOINTS
FOR RELIABILTY AND ENGINEERING EXCELLENCE

Gould To Have New Laboratory

The National Battery Co., with WPB approval, will construct and equip a new testing laboratory for its Gould Commercial Division plant at Depew, New York. The laboratory will fill the increasing need for research and product development in connection with Gould-manufactured U. S. Army and Navy batteries.

A one-story brick building is planned which will have 110 ft. frontage adjacent to the present office building at 35 Neoga Street. With a 90-ft. depth, the building will have approximately 10,000 sq. ft. of floor space. It will be furnished with the latest type equipment for complete testing and analysis of batteries, with two of the primary testing sections wholly devoted to research and quality control.

Rowland Spring Plant Enlarged

A 100,000 square foot addition to the William & Harvey Rowland, Inc., Philadelphia factory has been completed.

The plant addition has been so arranged that it will facilitate the manufacture of springs, especially "short runs." Six new shipping bays have been constructed so that six trucks can be loaded simultaneously.

RED BALL EXPRESS

(CONTINUED FROM PAGE 53)

Highway was the result. It is built around the basic pattern of circuitous route of one-way roads. The truck-train heading to the battle dumps travels down one side of the route with food, gasoline and ammunition —top priority supplies. On its way back for another payload it flows back up the other side, usually with captured enemy goods.

The trucks load supplies at beaches, depots and ports, then transport them to railheads and dumps. As the front line moves forward, the length of the haul increases but the trucks still keep up the same fast pace of movement. The trips now are requiring from two to three days, but trucks are on the move all the time.

Roughly speaking, between 60 and 80 per cent of supplies moving to the front via Red Ball Express are food and petrol. Clothes must wait or go by a circuitous route on slower vehicles. Refrigerator trucks, carrying fresh meat, butter and other perishables, are included in many convoys.

The Quartermaster Corps is seeing to it that mistakes of the first World War in supplying combat troops are not repeated. Each convoy of food has "balanced loading"; that is, every group of trucks has all components of feeding—not just beans, canned meat or the like.

Seldom do trucks return empty to their base. Thousands of tons of captured enemy material, such as food and clothing, are brought to the rear to be given to prisoners of war.

A sign posted at a busy Transportation Corps headquarters in France which directs operation of the Red Ball Express reads: "Keep 'em rolling, keep 'em supplied, and keep 'em smiling."

Huge supply dumps forming along the German border are ample testimony that Transportation Corps is performing its task superbly. Made up of men who have spent their lives in the transportation business in the United States and in the Army, the Transportation Corps almost overnight brought order out of chaos by evolving a plan to get supplies to fast moving combat troops. The Red Ball Express, a top priority truck-train, was created when divisional commanders started using their trucks to move men instead of supplies.

Maj. Gen. Frank Ross, Chief of Transportation in the Communications Zone, is proud of the job his men have done.

He said, "I wish to commend all individuals and units in the Motor Transport Service for the work they have accomplished in moving supplies and personnel to support the Armies in the field. The success of recent operations is directly attributable to the fact troops, replacements, ammunitions, gasoline, and food were hauled forward by your combined efforts. Both men and machines have performed prodigious tasks. You have worked continuously for long hours. You have fully lived up to the motto of the Corps, 'The Transportation Corps Will Furnish the Necessary Transportation.'"

Sixty per cent of the personnel of the truck companies working the Red Ball Express are Negro soldiers. Many of them drive 2½-ton trucks

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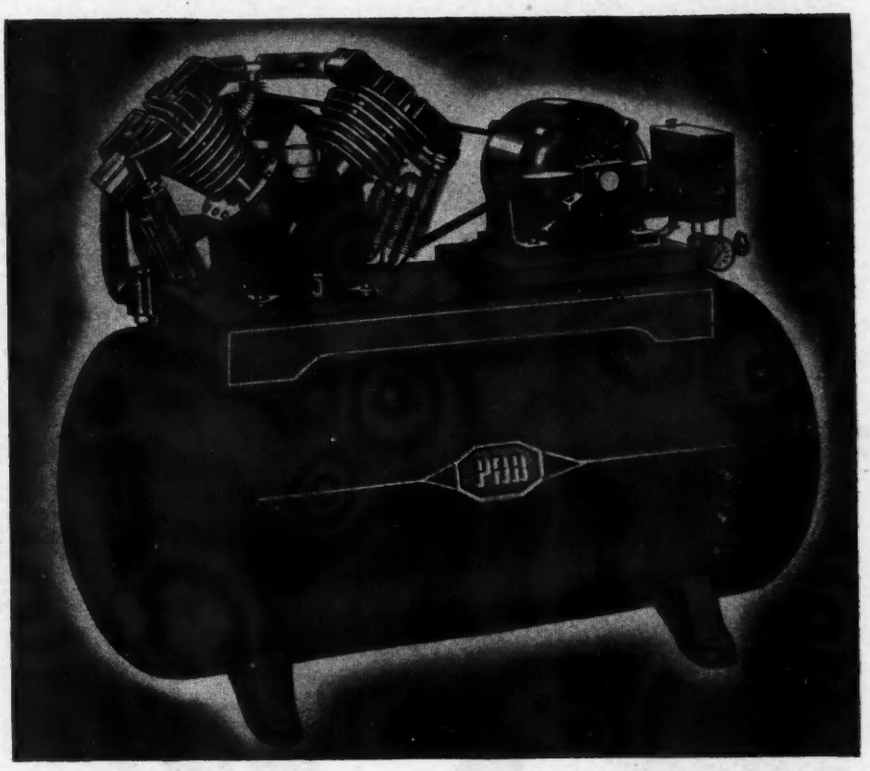


PAR MODEL 50

- **A brute for work—handling large volume of air requirements for a battery of pneumatical operations.**
- **A husky 5 H.P.—two stage 4 *cylinder* compressor equipped with 80 gal. tank.**
- **Maintains tank pressure of 175 pounds with quick recovery to assure top pressure.**

- ***Write for illustrated brochure of details.***
- ***BY COMPARISON—YOU'LL BUY PAR.***

PAR DIVISION

LYNCH MANUFACTURING CORPORATION
DEFIANCE, OHIO, U. S. A.

RED BALL EXPRESS

(CONTINUED FROM PAGE 95)

with 1-ton trailers; some help load and unload cargo, while others help keep the vehicles in repair.

To keep the supply transport smooth and steady, thousands of trucks on the Red Ball Highway are moved as one. Each convoy is marked with a red ball or circle and holds priority over all other movements. As the trucks leave the ports and beaches, they move down the route to a Transportation Corps Regulation Post where they report the type of load they are carrying. At the Regulation Post the drivers receive their destination orders, then proceed further on the route to their company bivouac area where drivers are changed. Still further along the route the drivers stop at another regulating station which diverts the convoy to a dump which may be as far as 100 miles away. This same procedure takes place on the return trip.

Convoy commanders synchronize their watches and time-table their runs accordingly. Spaced at intervals and maintaining the speed of 25 miles an hour, all trucks halt at 10 minutes to the even hour for a "break." One of eight American Red Cross Clubmobiles may greet the boys at this time and give them hot coffee and doughnuts.

The Red Cross is operating eight Clubmobiles which serve hot coffee and doughnuts to the thousands of troops who keep the Red Ball Express rolling with essential material from the rear supply lines to the front.

The Clubmobiles ply the highways day and night, following the Express as it speeds its valuable wares to the fighting troops. A cup of coffee and a few doughnuts, served by attractive American girls, adds zest and variety to what might otherwise be a monotonous trip.

Appreciation of this Red Cross service is shown by the drivers by their praise of the girls who take the same risks and put up with the same discomforts as they do.

The Red Ball also provides bivouac areas where the drivers can pause to bathe, eat a hot meal and catch up on their sleep. But the flow of supplies is uninterrupted. About halfway along the eastbound road is a station where drivers are changed. While the new drivers carry on, the soldiers just relieved take a period of rest and refreshment. Then they meet their truck-buddies again on the other side of the loop, at the halfway point of the return trip, and reverse the procedure.

"Brains" of the super highway system is centered in Paris. Every night at midnight Com Z's G-4 (Supply) holds a meeting. Supply experts study Army Commanders' requisitions and distribution directives are drawn up. By 6 a. m. they are headed for a vital Com Z base section by air courier. By telephone, the base section commander advises depots in the area what supplies are needed. Thirty-six hours after the midnight session the trucks are loaded and ready to move.

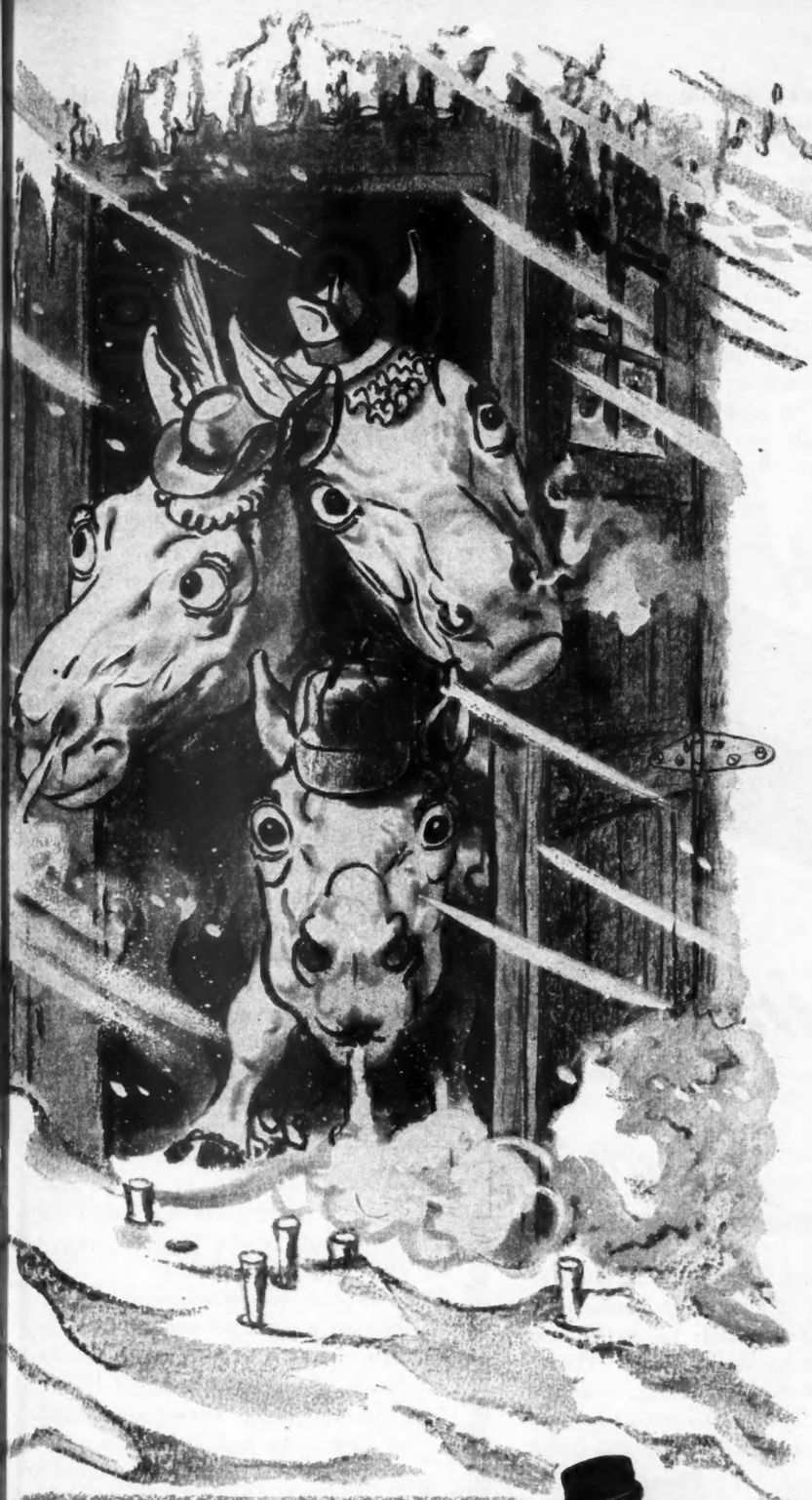
Nerve center of the activity then moves to the headquarters of a Transportation Corps Motor Transport Brigade. Pooled in the brigade are the thousands of vehicles and men comprising 147 Quartermaster Truck Companies.

(TURN TO PAGE 98, PLEASE)

Buy Ferodo for Road Safety

FERODO
BRAKE LININGS

FERODO AND ASBESTOS, INCORPORATED, NEW BRUNSWICK, N. J.



WINTER IS ROUGH ON HORSEPOWER

● One way to keep horsepower on the job, even in coldest weather, is to keep the motors clean.

Everyone knows that a clean motor runs better and lasts longer. And Casite *cleans* out motors, *keeps* them clean.

Casite is helping thousands of fleet units stay on the road . . . rolling up precious additional miles.

With Casite in the crankcase, engine performance goes up, operating costs go down.

THE CASITE CORPORATION
HASTINGS, MICHIGAN

WHY YOU NEED CASITE:

- It quickly cleans out harmful sludge deposits.
- Retards the formation of engine varnish.
- Frees sticking valves and rings.
- Keeps oil from congealing; speeds oil flow . . . gives a fast, sure start, even in coldest weather.
- Gives better and smoother performance.

Keep Casite in ALL Your Motors . . . ALL the Time

CĀSITE

CLEANS OUT MOTORS
KEEPS MOTORS CLEAN

IT'S A PRIVILEGE TO BUY WAR BONDS

RED BALL EXPRESS

(CONTINUED FROM PAGE 96)

In moving the tons of goods daily to the front, the gigantic truck-train itself has consumed more than two and a half million gal. of gasoline. But the convoys can carry more than one and a half million gal. of gasoline daily to the front in 5-gal. cans. Hundred of tank trucks supplement this supply.

Between 60 and 80 per cent of supplies going to the front on the Express is Class I goods—gasoline and food. Reefer vans carrying fresh meat, butter and eggs to combat troops operate regularly on the highway. Recently 10,000 troops were moved to the front in one night on the road. Another convoy of 465 trucks carried barracks bags to the fighting men who had dumped them at various places in Normandy.

One of the most important missions in the operation of the Red Ball Express Highway, the maintenance repair or replacement of supply vehicles that break down on the way to the front, is entrusted to the Ordnance Corps.

Ordnance Handles Breakdowns

In case of a breakdown, no truck holds up its convoy. The driver pulls out of line and fixes his truck. If he doesn't, a Red Ball Ordnance crew either makes the repair or issues him a new truck on the spot.

From the assembly terminus of the supply truck columns to the front line areas is kept a continuous watch of Ordnance patrols for halted or slow moving vehicles. They have one order which they obey to the letter: "Keep the trucks on the move at all costs!"

The longest and most arduous stretch of the highway is the charge of Com Z. The rest of the line to the front is the responsibility of the Advance Section of Communications Zone.

If a driver halts his vehicle on the Red Ball Express Highway he must answer the road patrol's question, "What's your trouble?"

If the truck needs repairs and the work cannot be completed in a few hours the driver is given a new truck and the supplies hurriedly transferred. For the Ordnance groups, repair shops, wreckers and patrols, scattered along the highway it is a 24-hour vigilance.

Road patrols carry a wide assortment of spare parts that enable them to perform all but major repairs on the spot.

Despite the tremendous strain of driving top-loaded trucks along third rate roads at high speed for long hours, the spirit of Red Ball drivers is extremely high. They know the value of their work and are encouraged by stories of the captain who unloaded his own jeep, and of the colonel who threw off his jacket and worked as a roadside stevedore.

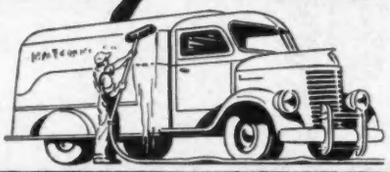
Ordnance wreckers, huge steel cranes on wheels, have a vital job on this highway. They are ready to move immediately on receipt of a call from patrols to bring in a battered truck or jeep. The unsalvagable wrecks along the highway tell of the price being paid in the operation of this super transport highway.

Ordnance repair shops usually are spread over a large field. Each has a

(TURN TO PAGE 102, PLEASE)

SPEED WASH
FOUNTAIN BRUSH

Cuts Washing Time in Half



Washing trucks and trailers with Speed Wash gets amazing results with little effort and great speed. Clean, fresh water feeds right through the handle and tufts, so that each 12 inch stroke does a complete job of soaking, scrubbing and rinsing. There's no waste motion changing tools and back-tracking over the same surface. You can see how this easily cuts washing work and time in half, does a better job, and also saves the finish.

FULLY GUARANTEED

Put Speed Wash to work on your trucks. If it doesn't measure up to your expectations, return it for a full refund of your money. Order on this liberal basis today. Extend your priority of AA-5 or better, to insure prompt shipment. Make out your check or money order to Milwaukee Dustless Brush Co.

9.45 post paid if check accompanies order.

"Dustless"—"Speed Sweep"—"Speed Wash"—brushes

Milwaukee Dustless
BRUSH COMPANY

526 NORTH 22nd STREET, MILWAUKEE 3, WISCONSIN

IRES ARE SAYING . . .

an Old Name New Fame PENNSYLVANIA

From Suez to San Francisco, men who know tire performance today know you can count on PENNSYLVANIA Tires for longer wear under the toughest going. Every Pennsylvania Tire has these three long-life features, all originated by Pennsylvania engineers:

DUAL PURPOSE TREAD—Pennsylvania was the first to use the dual tread—tough, wear-resisting outer tread and cool-running inner tread. A big plus value in extra miles!

SUPER-TEST CORD CARCASS—Pennsylvania Tires have the tough, shock-absorbing Super-test Cord carcass—another reason Pennsylvania Tires are the choice of men who know tires.

SUPER PRESSURE CURING—Hailed as one of the greatest developments in tire engineering. Super Pressure Curing gives Pennsylvania Tires a more flexible carcass, greater tread density—longer life.

Ask your Pennsylvania dealer for this pocket-size Tire Manual, or write to Jeannette, Pa. for your copy.

ANNETTE, PA.

RED BALL EXPRESS

(CONTINUED FROM PAGE 98)

frame rack, a grease rack, a paint shop and two automotive sections where whole motors are installed.

Most of the repairs are for engine defects caused by the terrific punishment the trucks are given to make shortened schedules. Sometimes Ordnance patrols trail a convoy out of their area, picking up immediately any trucks that fall behind. Patrols also act as emergency ambulances and firemen, brake fires being a common occurence along the highway.

Radio Communication

Part of the success of the Red Ball Express Highway has been due to the Signal Corps' communications system, inaugurated on August 25.

This enables effective control over the flow of traffic along the highway and maintains a record of what each convoy contains and its final destination, so that delay is avoided at the convoy terminus where supply trucks radiate to the sectors of the battle front.

The rapid communications system has been achieved by a mobile, six-station radio network. The controlling station is located at Headquarters, Motor Transport Brigade, supervising the overall radio communications for convoy dispatch and control. The Advance Section of Com Z Signal Office assigned to this Brigade is Maj. A. A. Frederickson. His mission is the synchronization of transport movement.

These mobile radio stations consist of the SCR 399 set which has reached an all-time high in popularity among Army operators. Can be operated by key or voice and is transported in a 2½-ton truck, with its own power plant in a small trailer.

One of the radio stations is located in a Normandy town, western terminus of the Red Ball route, where convoys are formed and dispatched. When a convoy departs, a message is forwarded to all stations along the route as to what the convoy consists, its destination, and the method by which it is to be handled. Information is thus transmitted to all interested headquarters and agencies along the highway, insuring complete control of the convoy from the beginning to the end of the convoy's trip.

The peak of traffic handled by the net control station has been 5873 groups or a total of 98 messages in a day, each averaging 60 words a message. In addition to the radio network, the Motor Transport Brigade has four trunk circuits connected to the military switchboard in Paris. This permits the use of the entire Army wire communications at any time for the Red Ball Highway operations.

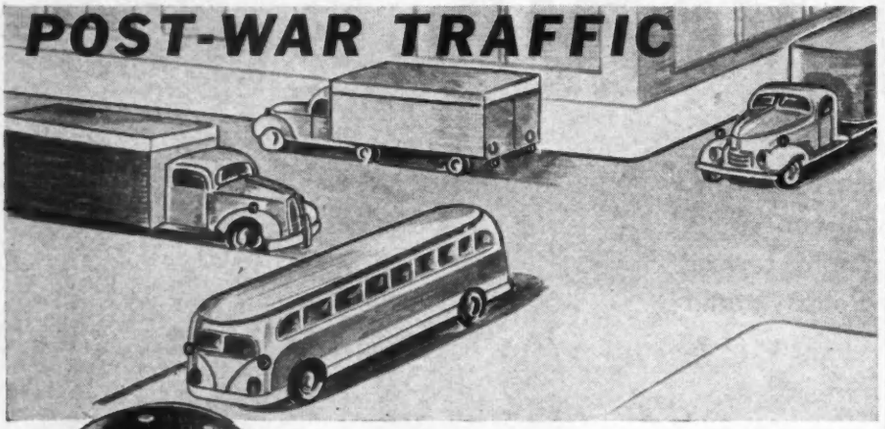
The GHQ Trunk Messenger Service also has a part in this communications system by maintaining motor communications between ADSEC Headquarters and Motor Transport Brigade Headquarters.

MPs Patrol Highways

Two battalions of Military Police, augmented by two battalions of an infantry unit, who were recently pressed into service, maintain a 24-hour traffic control service along the entire Red Ball Highway route.

The infantrymen were pressed into service after the length of the original

(TURN TO PAGE 105, PLEASE)



Teleoptic Finger-flip control switch on gear shift lever.

Teleoptic Instrument panel with, or without, pilot light control switch

Teleoptic Steering column control switch.

Post-War Traffic Will Demand the EXTRA SAFETY of DIRECTIONAL SIGNALS

1. Teleoptic can be seen from all angles, DAY or NIGHT, at 125 feet!
2. It is approved by ALL STATES requiring directional lights.
3. It was designed to stress Protection rather than price.
4. Guaranteed against all defects—integral construction—pedestals screw on, with less chance of shear.
5. Ground glass lenses.
6. 180° visibility.
7. Easily installed.
8. Finger tip switch control—3 types available for extra convenience.
9. Made with the same accuracy and perfection we are now putting into bomb fuses and other ordnance items.

On the Highway it's Teleoptic

In the Air it's Tel-air

The TELEOPTIC Company

712 Marquette St. Racine, Wisconsin

RED BALL EXPRESS

(CONTINUED FROM PAGE 102)

Red Ball route had more than doubled as a result of the extremely rapid advance of the combat armies.

At the present time there are nearly 3000 men engaged in controlling the traffic and assisting the drivers and convoy officers in problems of routing, safety sign posting, bivouacing, missing and gassing the trucks along the route.

Each of the MP battalions has 22 motorcyclemen patrolling the entire length of the route and every important intersection is posted day and night with one or more MP's to prevent the drivers from wandering off the designated route.

In addition to their jobs of keeping the Red Ball trucks moving as fast as possible, the MP's must keep all unauthorized traffic, both military and civilian, off the highway, find bypasses around areas that may become congested, direct lost drivers, keep civilians off the trucks, keep trucks at proper intervals, keep the Engineers informed of road conditions and the Ordnance patrols informed of the locations of stalled or broken down trucks and abandoned enemy equipment.

Frequent minor changes in the route are ordered, and the MP's are charged with the responsibility of posting the new route and directing convoys over the new road. As the convoys reach the forward areas, they are routed to either First or Third Army areas, and the split up of the traffic is controlled by the MP's who direct the drivers to the specified supply dumps.

For a short time after the Normandy breakthrough, the enthusiasm of the French people in swarming over the trucks and feeding the strange American drivers tended to delay the convoys and, indirectly, to cause accidents and the loss of some vitally needed material. But the MP's have succeeded in reducing the accident rate by a considerable extent.

Engineers Maintain Highway

A force of several thousand U. S. Army Engineers working on a 24-hour-a-day basis is keeping Red Ball Express Highway open to priority number one traffic on the way to the rapidly-advancing front.

Two entire engineer regiments have been assigned to devote their full time on the maintenance of this super-supply highway.

Twenty-four hours a day, engineer crews at work along all points of the highway, reinforcing bridge crossing, repairing damaged road areas, providing traffic signs, and handling general maintenance problems.

Open to traffic throughout the day and night, the road has some peculiar maintenance problems. Repairs, however, can be undertaken only by close coordination with traffic control headquarters, allowing the Engineers to rush a repair job in the short time between convoys.

Responsibility for the huge maintenance problem has been divided between the two Engineer regiments, with the Seine serving as the approximate boundary line.

Medical Aid Provided

Full facilities of the Army Medical Corps are available to the men who

(TURN TO NEXT PAGE, PLEASE)

Today's "Must":

GET MORE WORK OUT OF THE TRUCKS YOU'VE GOT....

Here's the First Easy Step in Keeping a Truck BUSY

"Do the best you can with what you have"—you know that famous Order of the Day. In your business that means: Make your present trucks do more work! With new trucks mighty scarce, and getting scarcer—what else can you do?

But you can't do it with just "wishful thinking." First you've got to find out if your trucks are working as hard as they can right now. Are they losing time occasionally on their routes? Are they held up by delays here and there? Are those delays avoidable? What do you *know* about these things?

You may think—"when the truck is out on a trip, how can I tell what goes on?" That's where the little SERVIS RECORDER comes in. Install one up in the cab (see illustration above) and the truck will "write" its own work report for the day—a little chart showing you *every* stop and delay.

It pays to have the facts. Write for our booklet—"*Ten Ways of Getting More Work Out of Motor Trucks.*" It's free. THE SERVICE RECORDER COMPANY, 1375 Euclid Avenue, Cleveland 15, Ohio.

The Servis Recorder

Tells Every Move Your Truck Makes

THE SAFE WAY
TO
PLOW SNOW

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INSTALL

Keystone Snow Plow Lights

Eliminate Accidents — Save Lives

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Used in Almost Every Snow State

IMMEDIATE DELIVERY

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RED BALL EXPRESS

(CONTINUED FROM PAGE 105)

ride the Red Ball Express, all the way from the beaches to the front lines.

Convoy leaders and the road patrols are provided with detailed lists of hospitals and other medical installations along the routes. In addition, each Red Ball Express bivouac area includes medical department personnel. Ambulances also are stationed at each bivouac area.

For minor mishaps and immediate first aid treatment on the roads, a 12-unit first-aid kit is carried for every four trucks in the convoys. These kits are equipped to provide emergency treatment for burns, wounds, fractures, sprains, and unconsciousness of any nature.

Until very recently, a General Hospital was available at Motor Transport Brigade Headquarters to administer to any ill or injured Red Ball personnel. Plans are now being considered to install a large medical center at brigade headquarters.

Complementing all of these medical department facilities, a Medical Detachment is a basic complement of every Quartermaster Truck Battalion operating on the super-highway. The personnel of these detachments staff highway aid stations at regular intervals along the routes.

"Ike" Pays Tribute

Of the Red Ball Express, General Dwight D. Eisenhower said:

"Some military strategists have been amazed at the speed with which the Allies have thrust forward, and had expected the Americans to slow their push and consolidate their gains, thus letting their supplies catch up with them.

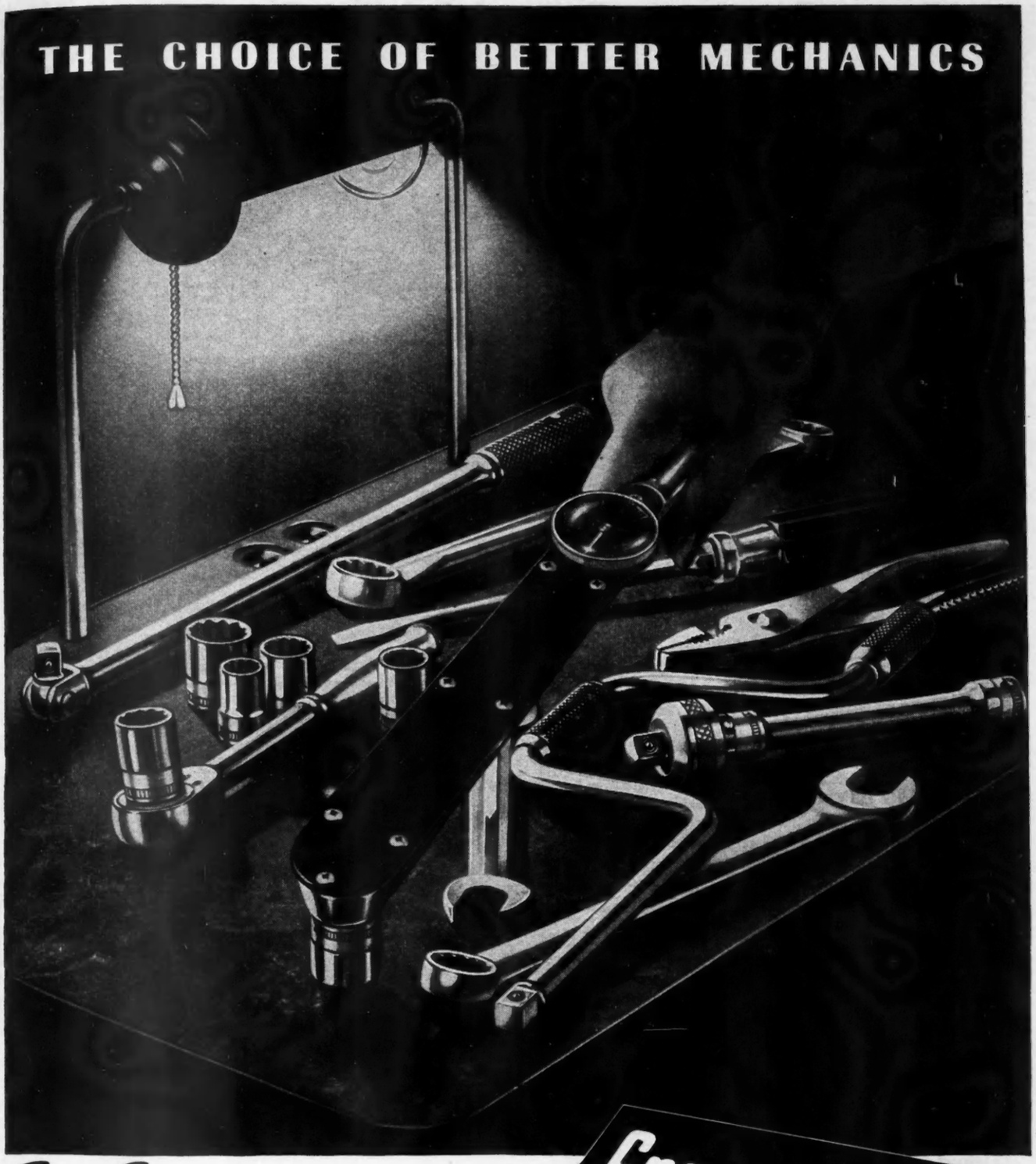
"The truck companies are working without relief to keep supplies pouring behind the swift advance of the American tank columns. The supply units are doing a great job."

END

(Please resume your reading on P. 54)

Karl Probst, engineering designer, identified with the automotive industry since 1906, has been appointed to handle special assignments in Reo's research department

THE CHOICE OF BETTER MECHANICS



Snap-on Tools
THE CHOICE OF BETTER MECHANICS

For Every **nut turning operation there is a Snap-on wrench *engineered* to do the job better, easier, with greater accuracy and safety. Standout for precision is the Snap-on Torqometer shown above . . . unexcelled among tension measuring wrenches for unfailing accuracy under all conditions.**

Widely used in factory assembly for precise bolt tensioning to prevent mechanical distortion, a Snap-on Torqometer insures prescribed bolt tensions on your important service operations . . . helps assure peak performance of every service job.

The TQ-150, standard 150 ft. lb. Torqometer accepts any ½" square drive socket and can be used with extensions or ratchet adaptors. As you tighten the bolt you watch the bolt tension increase . . . on the easily read dial . . . and stop at the exact tension required. Fourteen other sizes ranging from 0-30 in. lbs., up to 0-2000 ft. lbs., are also available. Write for Snap-on's car and truck tension chart.

SNAP-ON TOOLS CORPORATION, 8026-L 28th Ave., Kenosha, Wis.

Air Cargo Counts on Ground Carrier Cooperation

(CONTINUED FROM PAGE 57)

ported entirely via surface vehicles. This basic fact *must* be realized by ground handling organizations and carriers if they are to do their part in an effective, efficient air transportation system. Many of the improved handling methods will also be found applicable to all surface operations once they are developed and made available through necessity for air cargo.

Tables 1 and 2 show typical air cargo examples picked at random. Both tables are self-explanatory, and study will reveal where the service can be expedited through more efficient handling by the carriers.

These tables should demonstrate clearly what is meant by the title of this paper, "Air Cargo, A Problem of Cooperation and Coordination Between Carriers on the Ground and in Flight." The air carrier makes his maximum contribution on the longer distances. He adds tremendously to the potential market of the surface carrier for all shipments demanding rapid delivery, and therefore producing a greater revenue per unit.

Other Factors

There are two other additional fundamental factors which the writer wishes to emphasize because they are a part of the proper engineering analysis of this cooperative problem. The first of these concerns frequency of service, and the second is schedule reliability. Perhaps, they do not need emphasis at all, because they both become obvious considerations in any cooperative effort of the air and surface carriers to render a more valuable service.

Frequency of Service

Frequency of service by both carriers is essential in order to take advantage of the air carriers' speed. If a package must wait before starting its journey because of infrequent schedules, then the service suffers just the same as for similar delays in transit. This fact leads to the premise that the faster the speed of transport, the greater the need for frequency of schedules to best utilize that speed. This brings us to the conclusion that air cargo must be moved promptly, and therefore, large cargo airplanes operating at infrequent intervals, will not be able to compete with smaller craft which operate more frequently. Admittedly, there may be special cases where this would not be true. For instance, there may be large routine shipments of air cargo which will be ready for movement simultaneously for a sin-

(TURN TO PAGE 110, PLEASE)

TABLE 1

Typical Air Express Shipment of Automotive Parts from Detroit to Omaha

	Miles	Time EWT	Elapsed Time Between Points Hours	Minutes
Lv. Consignor		9:15 AM		
				25
Arr. Michigan Central Express Terminal	5	9:40 AM		
				20
Lv. Michigan Central Express Terminal	0	10:00 AM		
				30
Arr. Detroit Airport	16	10:30 AM		
				35
Lv. Detroit Airport via American Airlines Trip 9	0	11:05 AM CWT		
				45
Arr. Chicago	294	11:50 AM		
			1	50
Lv. Chicago via United Air Lines Trip 1	0	1:40 PM		
			2	00
Arr. Des Moines	306	3:40 PM		
				15
Lv. Des Moines	0	3:55 PM		
				50
Arr. Omaha	118	4:45 PM		
				45
Lv. Omaha Field	0	5:30 PM		
				20
Arr. Railway Express Agency—Omaha	5	5:50		
				10
Lv. Railway Express Agency—Omaha	0	6:00 PM		
				15
Arr. Consignee	6	6:15 PM		
	750		10	00
Totals—Air Carriage	718		4	40
Ground Carriage	32		5	20
Average Air Carriage Speed	153.6 mph			
Average Ground Carriage Speed	6.0 mph			
Average Consignor to Consignee Speed	75.0 mph			

TABLE 2

Typical Air Express Shipment from New York to Chicago

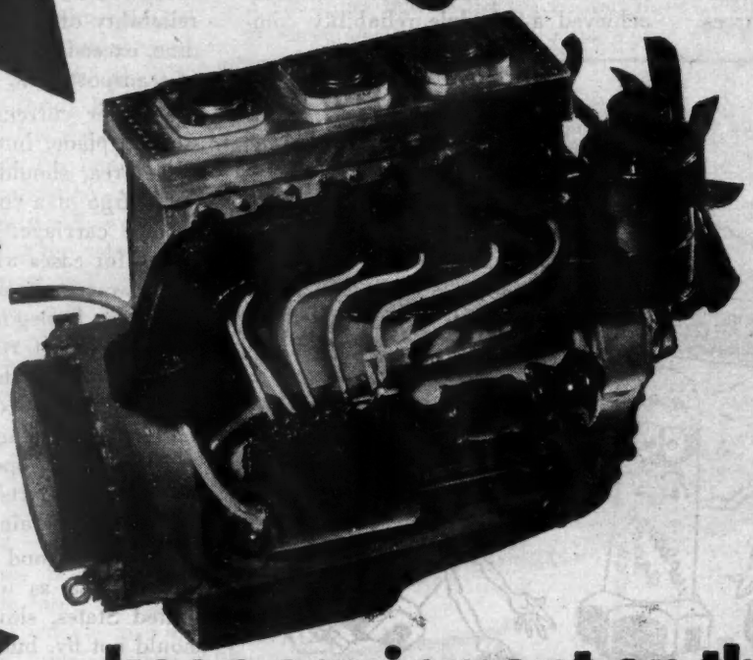
	Miles	Time EWT	Elapsed Time Between Points Hours	Minutes
Pickup at Store Door		10:50 PM		
				10
Arr. 31st Street Express Terminal	1	11:00 PM		
				15
Lv. 31st Street Express Terminal	0	11:15 PM		
				00
Arr. LaGuardia Airport	10	12:15 AM		
				45
Lv. LaGuardia Airport—United Air Lines Trip 19	0	1:00 AM		
			2	45
Arr. Cleveland	422	3:45 AM		
				20
Lv. Cleveland	0	4:05 AM CWT		
			2	00
Arr. Chicago Airport	320	5:05 AM		
				55
Lv. Chicago Airport	0	6:00 AM		
				40
Arr. CB&Q Express Terminal	10	6:40 AM		
				30
Lv. CB&Q Express Terminal	0	7:10 AM		
				20
Arr. Store Door	3	7:30 AM		
	766		9	40
Totals—Air Carriage	742		4	45
Ground Carriage	24		4	55
Average Air Carriage Speed	156 mph			
Average Ground Carriage Speed	4.8 mph			
Average Consignor to Consignee Speed	79.2 mph			

TABLE 3

Showing Comparisons Between Typical Truck and Actual and Theoretical Cargo Airplanes

Vehicle	Gross Weight	Useful Load	Payload	Maximum H. P.	Cruising Speed	Cruising H. P.	Wing Area
1. Slow Airplane	25,000	200	0	835	60	450	3,100
2. Truck	25,000	14,000	13,500	110	60	110	
3. DC-3	25,200	8,500	6,800	2,400	185	1,200	1,000
4. Modern Airplane	160,000	66,000	45,000	14,000	260	7,600	3,100

Don't let a "LAZY" oil SMASH your Diesels . . .



. . . keep equipment on the "Go" with hard-working TALPEX

IT doesn't take long for a "lazy" oil to put an engine out of commission. How can you tell a "lazy" oil from a hard-working lubricant? You can't until the damage is done. For while a "lazy" oil may *look* like other oils, it doesn't act like one. It doesn't have the "staying" qualities to resist corrosion . . . the formation of carbon, sludge, lacquer.

A "lazy" oil may have *some* of the properties necessary to efficient engine operation. But that's not enough. To do a job of lubrication in today's overworked engines an oil must have *all* of the following properties of Shell Talpex.

NEW SHELL TALPEX

—**IS NON-CORROSIVE** to alloy bearings. Protects all lubricated engine parts against corrosion.

—**HAS EXCEPTIONAL OXIDATION STABILITY.** Holds to a minimum the formation of sludge, lacquer and other products of deterioration.

—**HAS HIGH DETERGENCY.** Helps keep carbon, lacquer and foreign particles from adhering to pistons and rings, valves, ports.

—**HAS LOW CARBON-FORMING TENDENCY.** Reduces ring sticking and wear. Lengthens engine life.

If the oil you now use doesn't have *all* these properties, it's lazy . . . should be changed to hard-working Shell Talpex. Ask the Shell man to show you why.

SHELL

TALPEX

THE NEW, ALL-PURPOSE, HEAVY-DUTY LUBRICANT

trucks, busses, tractors, shovels, stationary and marine Diesels

AIR CARGO COUNTS ON GROUND COOPERATION

(CONTINUED FROM PAGE 108)

gle destination, and which will require the regular use of one or more large cargo planes to the full utilization of their load carrying capacity and economical flight time. But, for our discussion here, we are principally concerned with the type of material normally termed "express" which originates at many sources, and over considerable time. We cannot overlook the importance of frequency of schedule for its proper handling.

The maintenance of the highest standard of schedule reliability is a necessary adjunct to making the most effective use of air cargo service. Here again, the regularity and dependability of the ground carrier must equal that of the air carrier. Probably many will wish to point out that air transport has only recently achieved a schedule reliability comparable to that of the railroads and automotive vehicles. This is true, but aircraft have potential flight and control aids which will enable schedule reliability to be still further increased. Improvements in aircraft designs, power plants, instruments, communications equipment and better landing fields will enable the air transport operator to set up schedules which will be virtually independent of weather. There seems to be every reason to believe that schedule reliability of air transport should in time, exceed that of any other means of transportation.

Another current fallacy is that a slow airplane, but one with a large wing area, should be able to transport cargo at a cost to compete with surface carriage. This is not true, except for cases where, due to mountains, swamps, and other obstructions to surface transportation, the cost of construction of roadbeds and highways and the greater length of routes, overbalances the cost formula so that the airplane has an advantage due to its ability to operate directly between two airports, regardless of the intervening terrain.

Wherever good roads or rail facilities exist, as within most of the United States, slow moving vehicles should not fly, but should remain on the ground. For the same speed and weight of vehicles, the "rolling resistance" or "drawbar pull" for a wheeled vehicle operating on a good highway or on rails, is only a fraction of the "drag" required to pull an airplane through the air. The reason for this is explained by the simple statement that with a land vehicle, the weight is supported by a solid surface, whereas with an airplane, a high proportion of the "drag" must be utilized in producing a dynamic lift component equivalent to the weight of the craft.

A specific example will be helpful, although it does not provide a very practicable airplane. It would be possible to design and construct a cargo airplane having a gross weight of 25,000 lbs., and which would have a cruising speed of only 60 m.p.h. It could, therefore, be said to be competitive with a surface carrier of equivalent gross weight, operating at that same speed. However, it cannot carry any pay load. In fact, it appears that it cannot even

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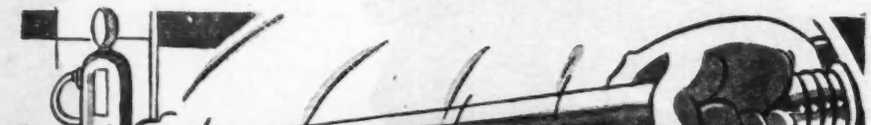

BETTER GET AFTER THESE
"POWER THIEVES"!

Wartime gasoline and wartime mileage restrictions make efficient spark plugs more vital than ever. Regular spark plug inspection helps eliminate the waste caused by dirty, worn plugs. (Getting under the hood for a plug inspection often reveals the need of other gas-saving service, too.) When new spark plugs are needed, install Edisons—built to get full power out of every kind of fuel. They're "backed by the greatest name in electricity"!

Edison
SPARK PLUGS
EDISON-SPLITDORF CORPORATION, WEST ORANGE, N. J.

AIR CARGO COUNTS ON GROUND COOPERATION

(CONTINUED FROM PAGE 110)

carry enough fuel to permit it to operate for any appreciable length of time. A truck of equivalent gross weight can carry a very sizable pay load of some 13,500 lbs. for a period of 5 or 6 hours at the same speed of 60 miles per hour. Items 1 and 2 of Table 3 show the direct comparison of these vehicles. Obviously, the data for Item 1 is "rough" since no such impractical aircraft have been designed or built. The data was obtained by extrapolations, and can be considered as indicative of the weights and powers which would be involved. Notice that the "slow" airplane requires almost five times as much power as the truck to cruise at 60 m.p.h. Further, it requires still more power (834 h.p.) than that in order to get into the air at the time of take-off.

The present DC-3 transport commonly used by the domestic airlines, also provides a useful comparison, since it carries a maximum gross weight of 25,200 lbs. It is shown as Item 3 in this same table. It cannot operate into small roadside airports, as could the "slow" airplane, but it does carry about half the pay load of the truck, although it requires a little over ten times as much cruising power as the truck while traveling a little over three times as fast.

The only way the airplane has of improving its economic position with respect to the ground vehicle, is to operate at as high a speed as is practicable, consistent with airport design, safety, power plant, aerodynamic and structural limitations. It goes without saying that the most effective use of power is obtained with the best aerodynamic refinements. Item 4 of this same chart provides a good indication of what can be expected in new designs. Starting with the same wing area as required for the "slow" airplane to get down to a "truck" speed of 60 miles per hour, we will increase the power to an amount compatible with modern design and increase the strength of the structure to handle the heavier power plants, the increased aerodynamic loads, and the added pay and fuel loads. The design now gives an entirely different picture. In wing area it is the same as the "slow" airplane which had the same gross weight and speed as the truck, but which could carry no pay load. This modern airplane can gross at 160,000 lbs., and can carry a pay load of 45,000 lbs. at 260 miles per hour. The distance, although not shown on the chart, will be approximately 1600 miles non-stop, and can be accomplished in a little over six hours of flying. This represents a pay load 3 1/3 times that of the truck; and it is carrying that pay load at 4 1/3 times the speed, and for a non-stop distance which would be entirely beyond the comprehension of the truck operator. However, in order to accomplish this, the modern airplane must be supplied with power plants capable of producing 127 times as much power in order to get that load into the air, and almost 70 times as much power is required to keep it in the air at the cruising speed of 260 miles an hour.

These comparisons should serve to

(TURN TO NEXT PAGE, PLEASE)

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● Here's the "work horse" of the oil fields . . . . a FABCO DUAL DRIVE and an oil field trailer. To move drilling rigs, boilers, pipes, timbers anywhere . . . across areas where there are no roads, sometimes not even trails. FABCO DUAL DRIVE doubles the traction, doubles the load carrying capacity. The low underdrive gear gives added power for the tough pulls. Ask your oil field trailer manufacturer for details . . . he knows FABCO, or write us direct.

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1249 SIXTY-SEVENTH STREET · OAKLAND 8, CALIFORNIA
Dual Drives · 6 and 10 Wheel Units · Logging and Highway Trailers · Frame Extensions

25 Years in this Business

AIR CARGO COUNTS ON GROUND COOPERATION

(CONTINUED FROM PAGE 113)

emphasize the fact that there can be no direct competition between the carriage of cargo by air and by surface transportation. There seems to be no possibility, in the immediate future, that surface carriers can approach the speed wherein the aircraft begins to operate at its most economical figure. There seems to be no way to build a slow flying airplane that can compete with the surface transportation in a speed range consistent with surface travel. Therefore, the two services are supplementary, and every effort should be made by each, to cooperate with the other in order to take advantage of the swiftness of air transport for the carriage of goods to distant areas.

END

(Please resume your reading on P. 58)

You're in for a Drubbing
LITTLE DRIP!
that's what YOU can say when you install FEL-PRO Gaskets!
Those persnickity little "Drips" of water and oil that cause engine trouble and customer annoyance are *licked* when you install Fel-Pro Gaskets.
When you call for Fel-Pro Gaskets, you are assured the finest performance, because they embody *all* the improvements and developments resulting from Fel-Pro's war production of sealing materials for war industries and military requirements.
To keep vital transportation rolling, and to save your time and money, see your Fel-Pro Jobber *first* for Engine Gaskets, Metallic Pump Packings, Grease Retainers and other Fel-Pro Sealing Products. Felt Products Mfg. Co., 1520 Carroll Ave., Chicago 7, Ill.
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PISTON RINGS FOR PARTICULAR PROBLEMS

(CONTINUED FROM PAGE 43)

cussed rather widely is ring sticking. In order to eliminate ring sticking, strict attention must be given to side clearances, accurate machining of piston ring grooves, and adequate control of blowby. Ring sticking is also aggravated by the type of oil which is used. Some of the older oils had a tendency to form sludge and oil varnish which will cause ring sticking. Detergent oils can be used which will minimize the formation of carbon, but on the other hand they do not usually have as good lubrication properties. Excessively high temperatures are also one of the primary reasons for ring sticking. This means that the cooling system must be designed properly and be in good condition. When all of the above factors are taken care of as well as possible, the application of the conventional compression rings (Fig. 1 to 4) should produce satisfactory results. However, in stubborn cases, the tapered side or wedge compression ring (Fig. 5) can be applied to advantage.

Piston Ring Type Summary

In this summary of piston ring types we shall mention not only the new developments of piston rings but also the types which are in common use.

Of the compression ring types, the plain compression ring having a rectangular cross-section and uniform wall thickness is still widely used (Fig. 1).

A variation of this ring type is the tapered face compression ring which has the cylinder contacting face tapered .001 or .002 of an inch along the width of the ring (Fig. 2). Initially, the bottom edge of the ring contacts the cylinder wall. A tapered face is quick seating and compensates for variations in the distribution of cylinder wall pressure. It provides a degree of oil control until the oil ring has had an opportunity to become seated.

The third type of compression ring which is quite prominent is the torsion ring or bevel back ring (Fig. 3). This type of ring has the upper in-

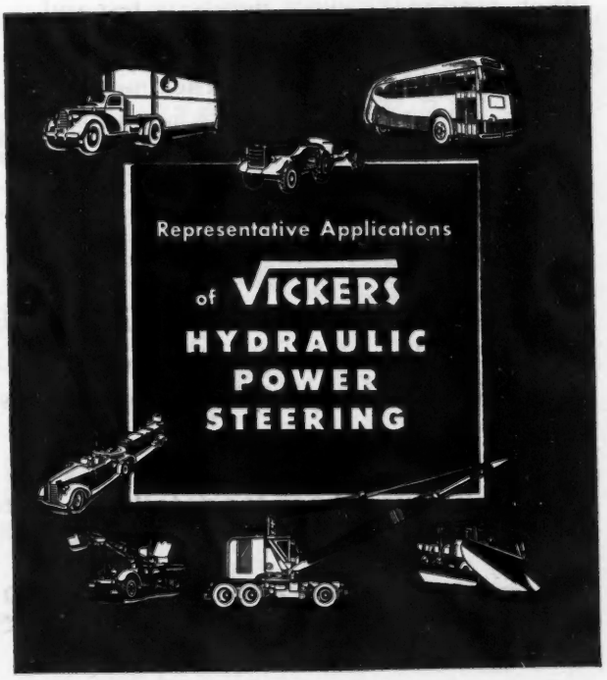
(TURN TO PAGE 116, PLEASE)

RUGGED...

Another Feature of VICKERS HYDRAULIC POWER STEERING SYSTEM

Providing effortless, positive, and shockless steering of even the heaviest vehicles, Vickers Hydraulic Power Steering has been in use under the most adverse operating conditions for the last 14 years. The hydraulic system is protected against overload by the relief valve which limits the maximum hydraulic pressure of the system. The pump and booster are thus protected against damage from excessive pressure and the linkage system from abuse. With Vickers Hydraulic Power Steering, road shock thrusts are transmitted to the frame of the vehicle instead of to the steering gear.

Among the many other advantages of Vickers Hydraulic Power Steering are: greater driver efficiency by reducing fatigue to a minimum, easy application to existing chassis designs, wheel "fight" is impossible, greater road safety, and automatic lubrication. Ask for new Bulletin 44-30 for all the facts about the Vickers Hydraulic Power Steering System.



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PISTON RINGS FOR PARTICULAR PROBLEMS

(CONTINUED FROM PAGE 114)

side corner beveled or undercut so that the cross-section is non-symmetrical. When this ring is compressed to its operating position, the unbalanced stresses cause it to twist and it twists in such a manner that the lower edge of the ring is presented to the cylinder wall with pressure. Thus, the action of this ring is similar to the tapered face compression ring. Another advantage claimed for this ring is that when it is assembled in the engine, its twisting or dishing action provides a better seal between the side of the ring and the side of the groove, thereby preventing blowby behind the back of the ring. There is also a possibility of a dampening effect due to side friction which will prevent ring vibration and blowby at high speeds.

A notable advancement in compression rings is the thick wall ring (Fig. 4). It has become so important that two years ago the SAE set up standards for this type of ring. Its development was made possible by gradual development of higher strength piston ring iron. Thick wall rings are about 20 per cent thicker than the conventional type. The advantages of the thick wall ring are numerous. The first is that it exerts a higher radial wall pressure and blowby at high speeds is minimized, due to the fact that the higher pressure maintains contact. Also, the ring's natural period of vibration is higher and with less chance of ring vibration, there is also less chance of ring breakage due to fatigue. The higher tension is also likely to cut down the tendency for the ring to stick in the groove. One of the most important functions of a compression ring is to transfer the heat from the head of the piston to the cylinder wall. As far as the rings are concerned, the limiting factor here is not the width of the ring but the radial depth of the ring. Thus, the use of thick wall rings may result in a cooler running piston and further decrease the possibility of ring sticking.

The tendency for years has been for compression rings to become narrower and narrower. We should report that although only a few years ago 3/32 was the narrowest width, we are now down to 5/64 and 1/16 widths in relatively large diameters. The reduced weight has resulted in lower inertia loads on the ring lands and the sealing ability has been improved rather than reduced.

A relatively new development in compression rings is the tapered side or wedge compression ring used in aircraft and truck engines (Fig. 5). Instead of having parallel sides, this type of ring has tapered sides the included angle of the sides being 8 deg., 15 deg., or 20 deg. The SAE standard set up about a year ago is 15 deg. This type of ring is particularly useful in the solving of ring sticking problems. This is a case where the piston ring industry has had to help out the lubricating oil industry on its ring sticking problems. As this type of ring breathes in and out of the groove, the side clearance increases and decreases which tends to break up carbon formation. Also,

(TURN TO PAGE 120, PLEASE)

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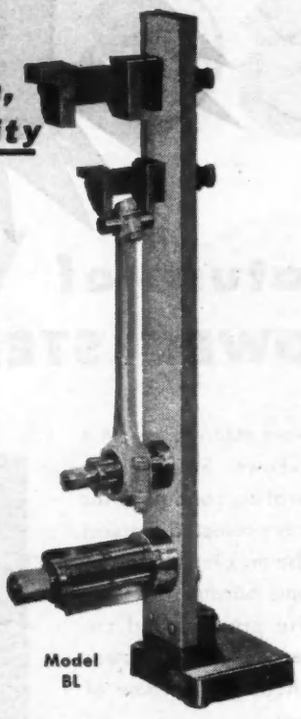

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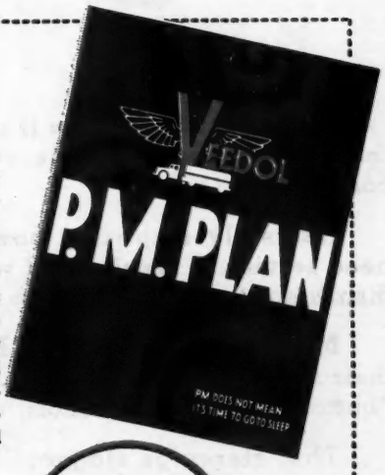

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PISTON RINGS FOR PARTICULAR PROBLEMS

(CONTINUED FROM PAGE 116)

as this ring wears radially, the side clearance increases, and there is a possibility that the carbon formation does not have an opportunity to catch up with the increasing side clearance.

The piston ring groove is cut at the same angle as the side of the ring and it is readily apparent that there is a side sealing movement or wedging action similar to the sealing action of an ordinary engine valve. Thus, blow-by around the back of the ring is minimized. This design also allows the groove and piston ring lands to be designed so that they are much stronger. The sides of the groove are tapered and the piston ring land becomes wider toward the center of the piston. The bottom of the groove instead of being made flat, is a radius, joining one side of the groove to the other. This is a remarkably strong land construction which minimizes the danger of ring land breakage.

During the past few years, ring coatings have come into prominence and among these we have the phosphate coatings, and the cadmium and tin plate coatings. These are all thin coatings designed to resist erosion and abrasion during the break-in period. They also provide very excellent rust protection.

An outstanding development is the use of chrome-plated piston rings (Fig. 6). Chrome plate is applied only to the cylinder contacting face of the ring and the thickness of coating is usually .005 of an inch. One of the causes of piston ring wear is corrosion and we all know that chromium resists corrosion to a very high degree. Chromium also seems to have a very low friction and when properly applied, chromium plated rings have resulted in lower cylinder wall wear. The first chrome-plated rings were not successful because they scuffed and scored and chipped and caused the cylinder walls to be damaged. It was found out quite accidentally that chromium could be successfully used on piston rings if the surface of the chrome plate was made porous. A porous surface absorbs oil and also permits the hard chrome to seat properly and provides the necessary seal. The porosity is usually .001 to .002 of an inch deep and is produced by special deplating processes. A remarkable thing about chrome plating is that after the porous portion wears off, the rings keep on running without any bad effect whatsoever. It is possible that there are microscopic pores in chromium which have been given a chance to absorb oil and thus the usefulness of the chreme-plated ring is not ended when its manufactured porosity is worn off.

The above types can all be used with piston ring expanders or inner rings to augment the cylinder wall pressure or to provide piston stabilization. Steel segments are also used in connection with cast iron compression rings and expanders to produce a ring which not only has excellent sealing qualities but also acts as an auxiliary oil control ring (Fig. 7). Of oil rings, the slotted or ventilated types are still the most widely used. The simplest design is a compression

(TURN TO PAGE 123, PLEASE)

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PISTON RINGS FOR PARTICULAR PROBLEMS

(CONTINUED FROM PAGE 120)

ring which is slotted to provide a passageway for oil from the face of the ring to the back of the ring and then through hole at the back of the groove, through the piston to the crankcase. Higher unit radial pressure is achieved by cutting away the face of the ring with a circumferential channel. Oil scraper rings are also used which involve one or two undercuts in the face of the ring. This not only increases the unit pressure of the ring but also provides space for oil to accumulate on the down stroke. Channeled and slotted rings are also used with expanders to obtain higher unit pressure and the expander type oil ring is very useful for replacement in worn cylinder (Fig. 8).

Even higher unit pressures can be achieved by using the steel segment type of oil ring (Fig. 9). This ring consists of two narrow steel segment rings separated by a spacer which is ventilated to provide passage of oil. This combination is backed by a piston ring expander the pressure of which acts through the medium of a steel segment resulting in a high unit pressure against the cylinder wall. This is very effective in reducing thick films of oil such as we have when piston clearances are increased because of cylinder wear and when more oil reaches the cylinder because of worn connecting rod bearing.

Piston ring finishes also have an influence on performance and several advances have been made in this respect. Finishes themselves are not new but their application has been tied in closer with the development of modern high speed engines. There has been a better understanding of the effect of these finishes. For instance, many years ago there were quite a few rings manufactured with the cylinder contacting surfaces having a ground finish. This was given up in favor of the relatively rough turn finish, the idea being that a finish of this sort would seat more quickly and provide a better seal. The trend of later years was to go to a smoother turn finish as it was thought that a finish that would wear in quickly would also wear out quickly. However, it has been discovered that a cylinder contacting surface having relatively deep grooves running circumferentially would actually withstand heavier surface loading without scoring or scuffing. This is not only due to the retention of oil but also, mild score spots which start due to high temperature at a single point are isolated and prevented from spreading. This development has resulted in the setting up of specifications covering the cylinder contacting surfaces. Finishes of this type are protected and their value enhanced by the application of the various nonmetallic and soft metal coatings. We have mentioned chrome plating as a surface coating, but we do not think this should be placed in the surface finish category. A chrome-plated ring is really an altogether different type of ring and this is illustrated by the fact that steel rather than cast iron can be used to make up the body of the ring. It is also illustrated by the fact that the proper functioning of

(TURN TO PAGE 125, PLEASE)

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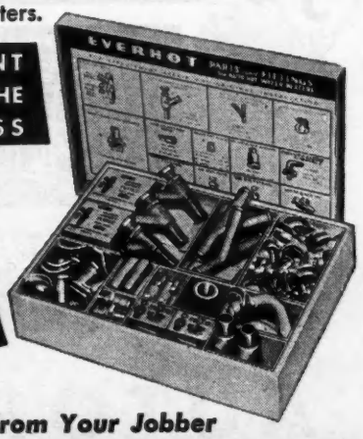

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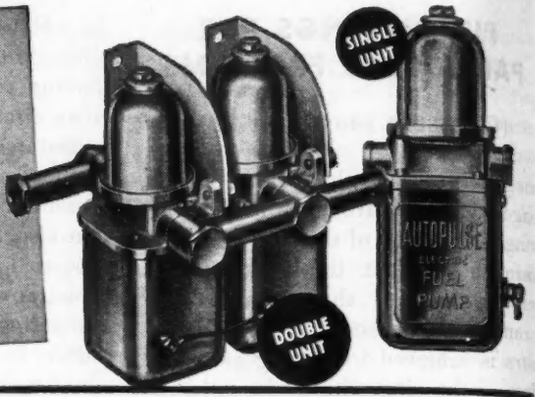
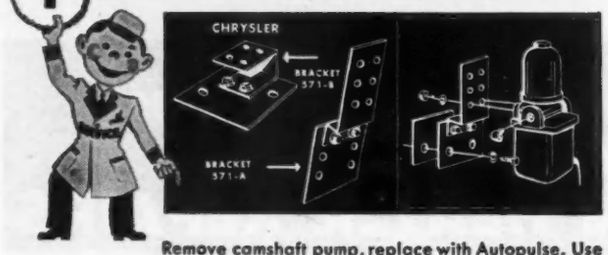


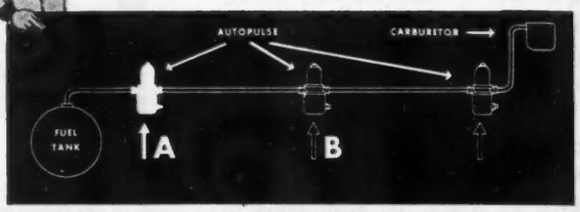
1 Passenger Cars and Light Trucks



Remove camshaft pump, replace with Autopulse. Use Bracket 571B with Chrysler built cars, 571A with all others. Electrical connection is from pump binding post to ignition terminal on back of ignition switch.

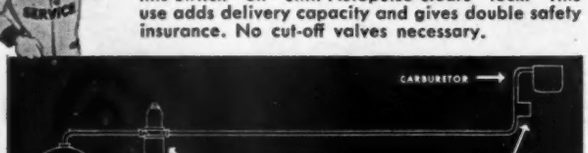
2 Commercial Cars—Or where there is Vapor Lock

Choose convenient location along frame below carburetor and away from exhaust heat. Install Autopulse for pusher action or pull-and-push action. While position A is preferable, all things being equal, positions B and C are satisfactory, and even to be preferred if pump is thereby better protected from wheel-splash.



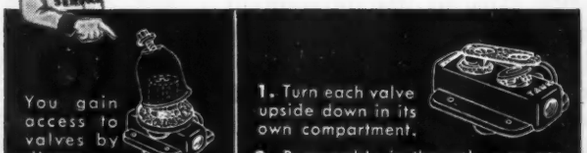
3 "In Series" with Cam Pump

Install Autopulse additionally to camshaft pump. Electrical connection is from pump binding post to a special switch. When vapor lock develops, turn this switch "on" until Autopulse clears "lock." This use adds delivery capacity and gives double safety insurance. No cut-off valves necessary.

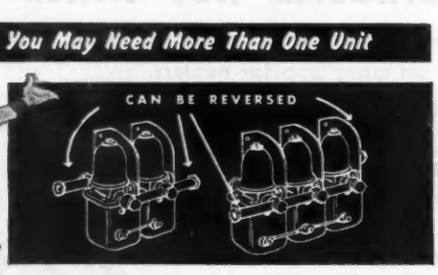


4 Reversing Flow Direction

Every Model No. 500 Autopulse can be made to pump in either direction—a great convenience when existing fuel lines are on "wrong" side.


You gain access to valves by disassembly of the filter assembly in the usual way:
1. Turn each valve upside down in its own compartment.
2. Reassemble in the only way possible. Reversal of usual flow is result.
3. Re-mark inlet and outlet.

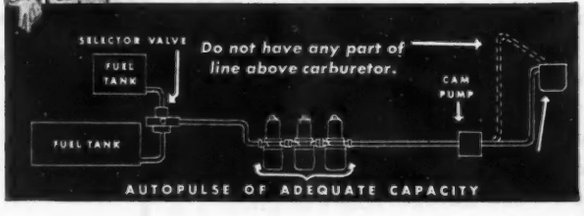
5 You May Need More Than One Unit



In normal service one Autopulse will serve a 100 h.p. engine. For 101 to 200 h.p. use duplex, over 200, the triplex. Where engines are chronically overloaded, reduce the 100-h.p. factor to 90 h.p. Do not under-equip: a duplex will last twice as long as a single pump delivering any given quantity of gasoline. Multiple manifolds may be rearranged for nearly any installation or flow direction.

6 Multiple Fuel Tanks

Mount Autopulse on carburetor side of selector valve "in series" with camshaft pump. Or, cam pump may be removed entirely. All parts of fuel line should be below carburetor and away from exhaust line heat.



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PISTON RINGS FOR PARTICULAR PROBLEMS

(CONTINUED FROM PAGE 123)

the chrome-plated ring depends on the retention of the chrome plate.

Piston ring end clearances and joint clearances have increased during the past few years. This has been brought about by higher operating temperatures and the tendency of rings to butt due to ring vibration impact loads. Side clearances have been increased to minimize ring sticking and this has been permissible by the development of piston materials and piston grooves designs which will stand higher inertia impact loads.

END

(Please resume your reading on P. 44)

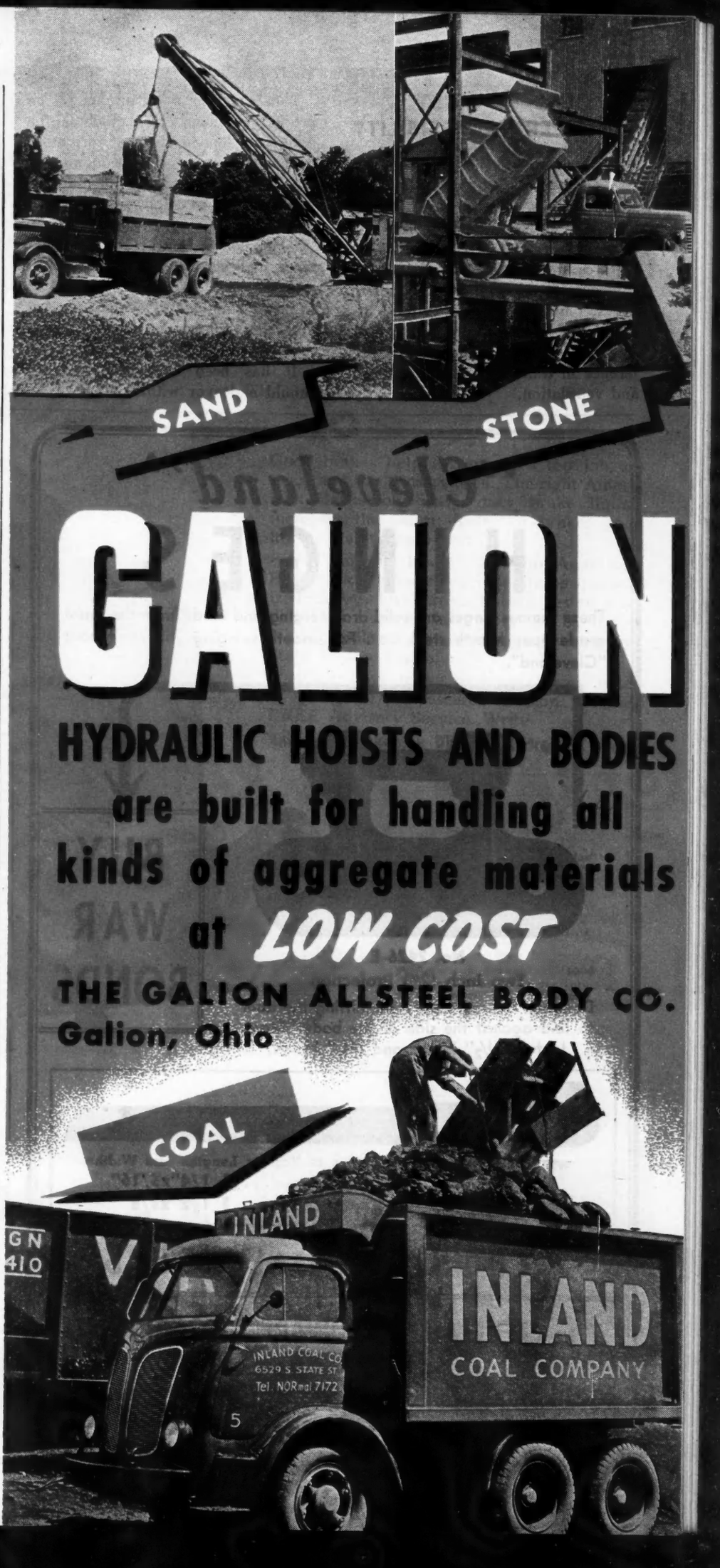
Match Speed With Temperature Hale Tells Michigan Truckers

At the recent annual meeting of the Michigan Trucking Assn., H. E. Hale, chief of the development department of Firestone Tire and Rubber Co., said that manufacture of synthetic rubber has outstripped the ability of tire manufacturers to build tires, due principally to lack of rayon cord and to shortage of manpower.

Mr. Hale stated that the cardinal points to observe in using synthetic tires are, "avoid overload and limit speed." He recommended that speeds be matched with temperature as follows: 40 deg. or less, an average cruising speed of 40 m.p.h. with a maximum of 50 for short distances only; 40 to 80 deg., average of 35 m.p.h. with a maximum of 45 for short distances, and for hotter temperatures, an average of 30 with a top of 40 m.p.h.

Don B. Smith, Consolidated Freight Co., Saginaw, Mich., was elected president to succeed Earl F. Winters of Detroit.

Mr. Smith was chairman of the board of governors, a position which has been abolished. Other officers elected include Howard Minnich, Red Star Transit Co., Inc., Detroit, first vice-president; John Mulvena, Mulvena Truck Lines, Alpena, second vice-president; Dan Maronick, Hollywood Cartage Co., Detroit, treasurer. Caroline Kirker was re-elected executive secretary.



DESIGN MUST CONSIDER ACCESSIBILITY

(CONTINUED FROM PAGE 72)

would include some form of air conditioning and controlled heating as the case might be. Some of these features are not easy to design, for a considerable difference of opinion exists, I find, as to what is most desirable in each case. The many types of service might well occasion a difference in thinking as to the seating and ventilation.

Noise is also a tyrant yet to be properly subdued. How much can be done will depend on what insulation materials have become economically practical and durable while possessing qualities to suppress noise and resist heat.

There have been many different types of seats and cushions used in the past years, but as yet there seems to be no standard of comparison beyond the opinion of engineers and drivers, and they don't agree at all.

It has been suggested that we should endeavor within the industry to standardize cab arrangements much in the same way that locomotive and commercial airplane people have done, but the difficulties to overcome before this could happen are great. Nevetheless, every effort is going to be made to improve the essential features of driver comfort and operation, and efforts will be made to make entering and leaving the cab easier and quicker.

It is not impossible, as two-way radio systems are promised within reasonable price range, that we shall have to make provision in the cabs of the future for fleet operators to have radio communication with their drivers. This might prove valuable to large fleet operators, if wave lengths can be allotted.

We must take accessibility into account more than ever, because operators have demanded it in no uncertain terms. Considerable thought will be given to improving postwar models in this respect. This may call for unconventionality of design, and certainly as far as the COE is concerned may call for very special arrangements. In our case, we propose to use a power-operated tilt cab on which we have now had a great deal of experience in the field. With such an arrangement, the accessibility is improved to a point beyond any conventional job at its best. It is expected that the premium which will be paid for such a device will be relatively small, and certainly it can easily be written off on the basis of the operator's experience in reduced maintenance cost. Tilt cabs for COE's, therefore, are a practical possibility.

Determined effort will be made to improve riding in general, but at the moment we find the conventional type of spring still in the forefront of consideration as the most practical, the most economical, and the easiest to maintain. Knee-action for trucks or torsion rod suspension systems are still some distance away and, at present, lie in the realm of impracticability, considering the all-around economics.

With respect to items such as water pumps, there seems no reason why we should not continue the use of the packless type of pump, even though changes may be made in the cooling system calling for additional loading

(TURN TO PAGE 128, PLEASE)

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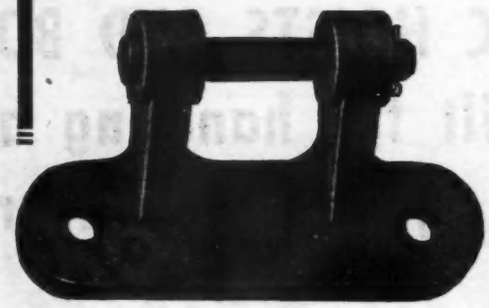

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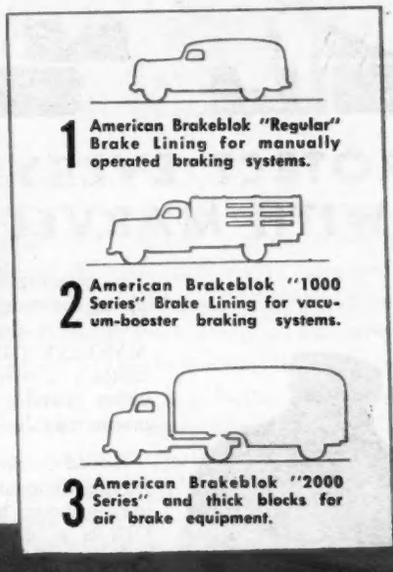

1 American Brakeblok "Regular" Brake Lining for manually operated braking systems.

2 American Brakeblok "1000 Series" Brake Lining for vacuum-booster braking systems.

3 American Brakeblok "2000 Series" and thick blocks for air brake equipment.

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DESIGN MUST CONSIDER ACCESSIBILITY

(CONTINUED FROM PAGE 126)

on the sealing means of this type of design.

Filters, both air and oil, will be given much more detailed study on the postwar vehicles. I think the need for extreme care in their maintenance has become very general, and for that reason their inclusion in design will be ever more valuable than in the past.

Then there is the question of oil coolers. Certainly, if our over-all engine temperatures are increased and the temperature of the oil raised, then the question of coolers becomes more important. Their successful use will depend on the design of a simple and readily cleanable unit with efficiencies permitting small size to permit room for it on the engine without eliminating other accessories.

Because of the need for more compact designs and the need for reducing costs and weight in the future, serious consideration will be given to pressure cooling. If some way can be found to eliminate the hazard of uninformed people removing the radiator filling cap at a time when there is pressure in the system, its use may be considerably accelerated. Some foolproof device is badly needed to meet this condition.

Cooling systems of the by-pass type and thermostats which will take the wear and tear more successfully are practical possibilities, and operators will have better assurance of more stable engine temperatures regardless of the kind of operation.

The transmission picture for the postwar models is one that is definitely in a fluid stage, and the pun is unconscious. To synchronize or not to synchronize may well be described as the burning issue, with the adherents of synchronization leading the field. The speed of changing with an excellent driver is not accelerated with synchromesh; neither are the gears liable to suffer in gear changing. Nevertheless, because excellent drivers are the exception rather than the rule, synchronizing does offer the possibility of increasing the over-all life of the transmission, providing enough beef is put into the synchronizers to eliminate them as a possible source of increased maintenance. Weight and cost will have to be increased and the advantage weighed against that background.

The torque converter, automatic transmission, and fluid clutches will not enter into the picture of on-the-highway service for many years to come, and the development of superhighways may have a lot to do with whether they are used at all in long-distance trucking. However, our past history in connection with the influence of passenger car design on truck design indicates that our hands may be forced, and against everyone's better judgment we may attempt to put some degree of automatic gear changing into the transmission picture for trucks. I am hoping that this will not happen and that only sound considerations will be used to justify the complicated control systems which go with any degree of automatic control. Off-the-road service is another matter, and fluid devices would seem to offer distinct advantages where the gross weights get into the 80,000 and 100,000-pound class.

(TURN TO PAGE 130, PLEASE)

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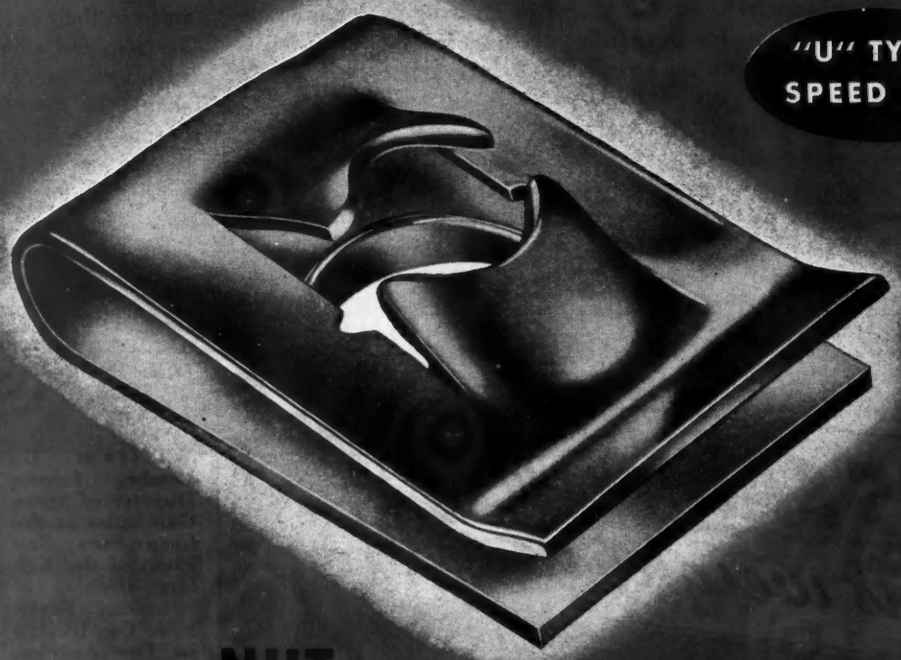
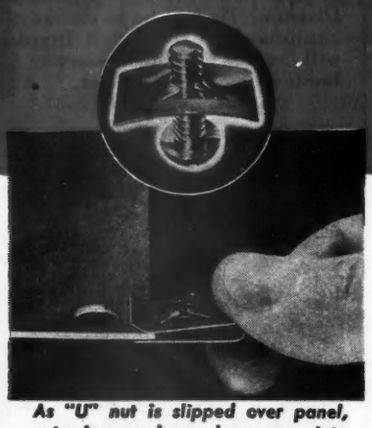
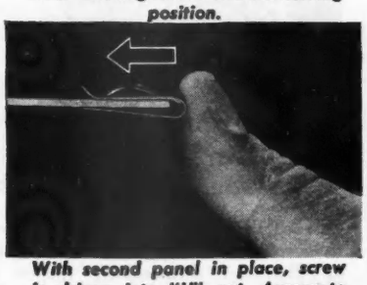


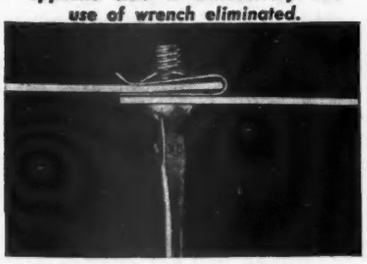
HERE'S THE NUT THAT *Holds itself* IN PLACE!



As "U" nut is slipped over panel, extrusion on lower leg snaps into hole—locking nut in screw-receiving position.



With second panel in place, screw is driven into "U" nut. Access to opposite side is unnecessary and use of wrench eliminated.



Here is a spring steel lock nut that broadens the smile of engineers and assemblymen everywhere. No more fussin' or cussin' over blind location fastening problems. No more expensive welding, riveting, or clinching nut plates in location. For "U" type SPEED NUTS merely snap into holes along the edge of panels, brackets, or flanges.

An extrusion formed in the lower leg of the "U" nut snaps into the screw hole and retains the nut in perfect register until final assembly. By varying the size of the hole, any degree of "float" may be obtained, to compensate for misalignment.

In addition to simple and speedy application, "U" type SPEED NUTS possess exceptional holding power and their arched prongs absorb vibration to definitely prevent loosening. Millions of "U" nuts were used on metal, wood, and plastic products before the war—millions more are being used today on war equipment. And postwar products that will capture the biggest markets will be assembled faster and at lower costs with SPEED NUTS. The men with the assembly "know-how" are the ones who move up the fastest. Write today for literature.

TINNERMAN PRODUCTS, INC.
2020 FULTON ROAD, CLEVELAND 13, OHIO

Speed Nuts* PATENTED

*Trademark Reg. U. S. Patent Office

FASTEST THING IN FASTENINGS

DESIGN MUST CONSIDER ACCESSIBILITY

(CONTINUED FROM PAGE 128)

Rear axles will be principally different in two respects. Brakes will be definitely given a good going over, increased in size, and speeded up in application, and the use of hydraulically operated brakes may easily be extended to gross weight ranges that previously have been out of the general picture for that type of brake. There will unquestionably be a mixture of axles in the field to the extent that hypoid gears will be considered, but these are not without their problems. It is expected that a very conservative policy will be followed regarding them as far as our design is concerned. Heavy-duty truck service background is still lacking, and long ago we learned that our cab tests were but the smaller part of the story.

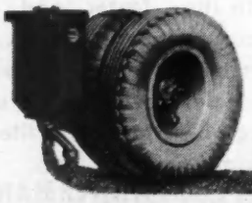
Generally speaking, the postwar vehicles, I hope, will be simple, functionable, gadget-free designs in which all the "doo-dad" are eliminated and with the full consent of the operators.

It is well-known that the engineers who design them, and those who later maintain them, are frequently overruled in their desire for simplicity by the sales and advertising departments, who feel that a few mills per mile should be thrown to the winds for purposes which they think justify this abandon. Let us hope they will have less influence in terms of stylized appearance and more influence in keeping engineers on their toes in meting the real demands of transportation.

END

(Please resume your reading on P. 74)

ELSTON ELECTRIC SANDERS

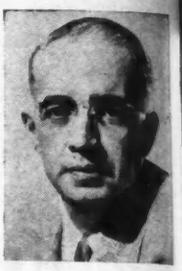


—will Sand the Slippery Highways

UL

HIGHWAY SAFETY APPLIANCES, INC.

2429 UNIVERSITY AVENUE • SAINT PAUL 4, MINNESOTA



William G. Lambe, former Director of Spray Gun Sales at the Crown Spray Gun Plant of the Kellogg Division of American Brake Shoe Co., located in Los Angeles, has been appointed an assistant general sales manager of the Kellogg Division. He will be in charge of spray equipment sales of that Division and will make his headquarters at the home office in Rochester, N. Y.

One of the first batch of experimental tires made of rubber from kok-saghyz, or Russian dandelion, whose seeds were flown to America from the Soviet in the darkest days of the rubber crisis in 1942, is shown coming out of the mold at the B. F. Goodrich plant in Akron. The upper illustration shows E. B. Newton and Dr. H. L. Trumbull of the BFG research staff examining some bales of the U.S.-grown product, which Dr. Trumbull says is comparable to prewar Far East plantation grades. This tire is stamped "War Tire AA," which signifies top grade in both tread and carcass. It will go into government service.

INSTALL VACDRAULIC *Now*

ON LIGHT, MEDIUM AND HEAVY DUTY TRUCKS

FOR SAFE *Feather Touch Stopability!*

Post-War traffic is going to be different. Braking systems will be called upon to do a better and safer stopping job.

Fleet operators and individual owners of commercial vehicles, right now fully appreciate the necessity of adding increased stopability to the vehicles they have on the road. Manufacturers of the new trucks which will come from the production lines recognize efficient stopability as a "must."

On trucks, busses and passenger cars, Vacdraulic split-second, feather-touch brake action reduces accidents, checks pay-load delays and is a definite "handling" asset.

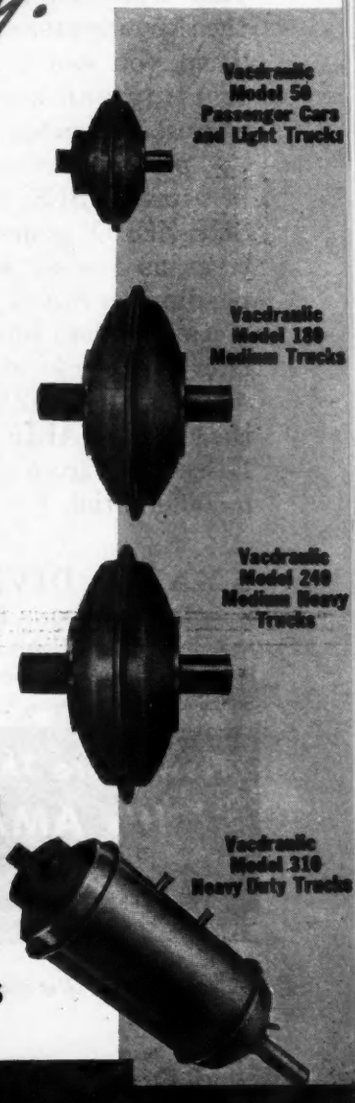
Vacdraulic multiplies the power of any hydraulic brake without action lag. There is no lost motion — no rods or links to get out of adjustment. The braking action is quick, yet smooth and responds instantly to the lightest foot pressure.

EASY TO INSTALL

Vacdraulic—the Brake Power Booster is complete. Only four simple steps are necessary for installation:

1. Mount Vacdraulic on the vehicle.
2. Connect to hydraulic line.
3. Connect to intake manifold.
4. Bleed hydraulic system.

May we send you complete details? EMPIRE ELECTRIC BRAKE CO., Newark 7, New Jersey.


Vacdraulic Model 50 Passenger Cars and Light Trucks
Vacdraulic Model 180 Medium Trucks
Vacdraulic Model 240 Medium Heavy Trucks
Vacdraulic Model 310 Heavy Duty Trucks

VACDRAULIC

THE BRAKE POWER BOOSTER

EMPIRE PRODUCTS INCLUDE:

MAGDRAULIC Electric Brakes • VACDRAULIC Power Braking • POWER STEERING DEVICES • RHEOSTATS

VACDRAULIC is a Trade Mark of Empire Electric Brake Company

PM PROCEDURE AT TANK DESTROYER CENTER

(CONTINUED FROM PAGE 64)

Proper maintenance starts with the driver, who, because of ignorance or carlessness, can render a vehicle unfit for service. He is taught to check tire pressure, oil quantity, cooling system, lights and similar essentials to good operation and safety, not only before starting on a trip but at every stop. He reports, on a trip ticket, unusual conditions that may lead to operating trouble or breakdowns. He is taught to do this promptly.

Every morning, at 11:30, the company motor officers report to the battalion motor officer for a round table conference. These company motor officers are the civilian equivalent of fleet superintendents, and the battalion motor officer's functions are related to a trucker's traffic manager. Complaints are registered, checked, and steps taken for the correction of any errors of maintenance.

PM checks are handled on a regular 1000-mile and 6000-mile basis. A printed form, shown in the accompanying illustration, lists all operations required for each check up. The form, called "work sheet" contains 142 items in addition to a record of compression pressure and battery condition. Of course, not all items are checked at each inspection period. By a system of symbols, mechanics are able to determine the work needed each time a vehicle is checked. If the items are found satisfactory, a check mark is made in the appropriate space at the left of each column.

Maintenance personnel are thoroughly schooled in the proper procedures. In case of doubt, complete technical information and detailed instructions can be found in maintenance manuals. All PM work begins and ends with a road test. This is considered most important because incipient, unreported trouble frequently can be detected when the vehicle is tested under actual operation. And only a final road test will show if the maintenance work has been thorough.

Work at the company motor pools is confined to adjustments and simple repairs. When a bad defect shows up, making a vehicle unsafe for operation, it is taken out of service and sent up for higher echelon repair work.

This simple preventive maintenance service and technical inspection procedure has been extremely effective. During a four-week period in October, for example, there were only 35 lost days—this for a fleet of 437 vehicles operating over rugged terrain in 95 per cent of its roadwork.

END

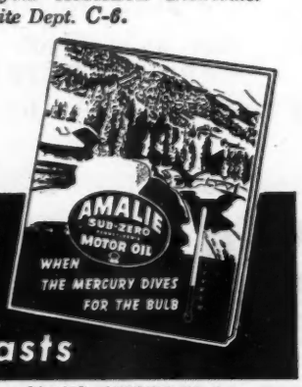
(Please resume your reading on P. 65)

Engineered to Keep Vital TRUCKS on the Job *All Winter*

Keep AMALIE SUB-ZERO in your truck crankcases whenever the thermometer reads below 45°. Then you can depend on easy starting and sure protection against sudden temperature drops . . . *plus* protection against temperature RISES, too! AMALIE SUB-ZERO pours at temperatures as low as 25° below, depending on S.A.E. grade. Yet it gives complete lubrication when the mercury climbs. Back AMALIE SUB-ZERO up with the right AMALIE Winter Grade Lubricants, from spring shackles to differential.

Get your free copy of "WHEN THE MERCURY DIVES" *new illustrated folder on winter lubrication. Ask your AMALIE Distributor or write Dept. C-6.*

AMALIE DIVISION
L. SONNEBORN SONS, INC.
88 Lexington Ave., New York 16, N.Y.
Southwestern Distributors:
Sonneborn Bros., Dallas, Texas.



Now More Than Ever—
It's AMALIE *First . . .*
Because AMALIE *Lasts*

REFINERIES: PETROLIA, PA., AND FRANKLIN, PA. • PLANT: NUTLEY, N. J.

J. W. Ackerman Promoted by American Chain & Cable

J. W. Ackerman has been appointed district sales manager of the New York and Boston territories of American Chain & Cable Company, Inc., covering welded and weldless chains, and Weed tire chains. Mr. Ackerman, whose headquarters will be at 230 Park Avenue, New York City, has been with the company since 1922.

New . . Developed for Postwar . .

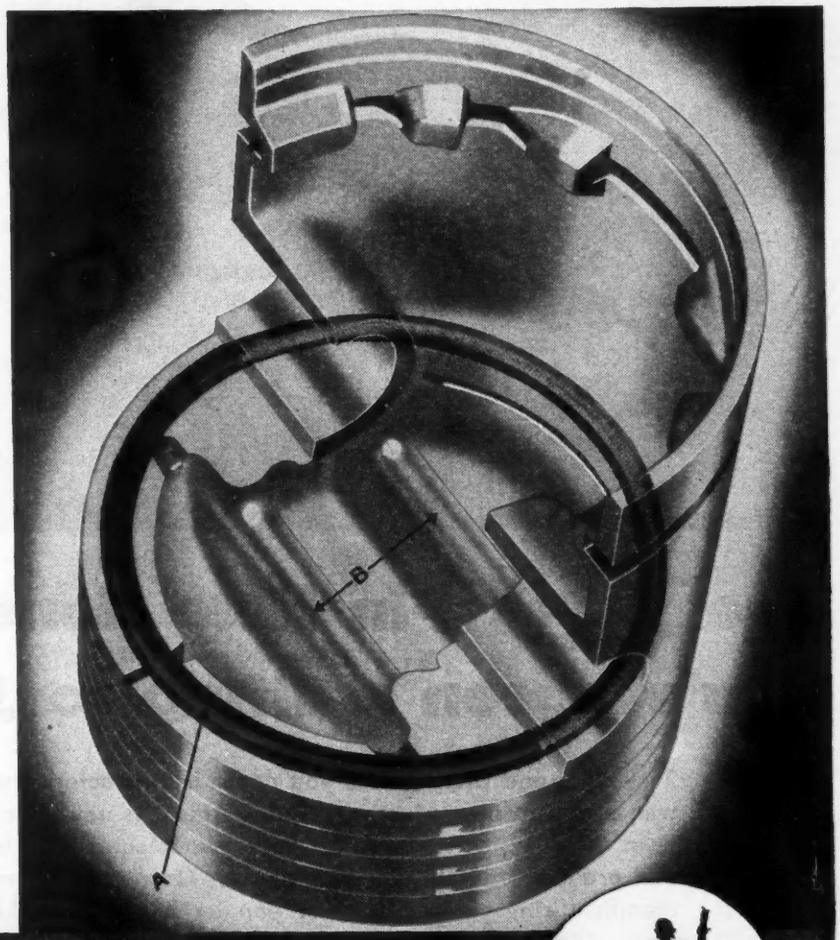
AVAILABLE NOW!

TOLEDO DIATROL PISTONS

Save Oil . . . Eliminate Scuffing *and* Scoring . . . Wear Longer

THE PATENTED CONSTRUCTION of the Toledo Diatrol* Piston gives it the most accurate control of thermal expansion of any piston on the market today, and provides positive control of the diameter at every temperature obtainable in the engine.

"A" shows continuous steel band cast in top of piston skirt. "B" indicates heavy ribs under head of piston. Ask your Toledo distributor for further details or write us direct.



*Reg. U. S. Patent Office

The TOLEDO
STEEL PRODUCTS COMPANY
TOLEDO, OHIO, U. S. A. • SINCE 1906
Makers of Fine Automotive and Aircraft Parts

TOLEDO

TURNPIKE'S TWO-WAY RADIO AIDS TRUCKERS

(CONTINUED FROM PAGE 63)

road toward Pittsburgh. The dispatcher called the Harrisburg office of the Turnpike Commission, made his request and gave details covering the incident. The driver's name, vehicle license number, type of vehicle and company name was all that was needed, except that, this request was of importance and of an emergency nature. Actually the trailer was loaded with Garand rifles and was to be ship-loaded at a Philadelphia pier. Hot loads like this demand quick action, fortunately, the driver had just reached the entrance to the Turnpike and was apprehended, given an explanation and turned back to Philadelphia. That kind of service was not only a cost-saver to the company but a life-saver to the war effort.

Similarly, another semi-trailer was erroneously dispatched from Philadelphia, only, this time, it was to be relayed on the Turnpike by interchanging trailers with another driver from Pittsburgh. Originally, the Philadelphia trailer was scheduled for New York City but in error was taken west. In this incident, the relay had already taken place and double checking by radio was necessary until both outfits had been stopped. Then a common meeting place was arranged for exchange of trailers. Messages had to be given each driver, the one was instructed to proceed to New York City, the other to go through to Lancaster, there meet a driver from Philadelphia who would pull out the trailer intended for the Pittsburgh run.

The above incidents rarely occur but are definitely the kind of happenings that only a trucker can sympathetically comprehend. The Pennsylvania Turnpike Commission also desires to make such problems part of their business and whenever possible aid in performing these appreciated services. It must be remembered, however, that the Commission is not offering wholesale use of its two-way radio communication system for dispatching trucks by every trucking company that moves over the super highway. Federal laws, rules and regulations by the FCC prohibits common usage of the system, outside of police work.

On the humorous, humane side of incidents, let us review the one about a truck driver from Akron, Ohio. It seems the draft board and the hospital were trying to get him at the same time. As far as the draft board was concerned, he was 1-A and that's that, brother! But the hospital! Well, after he was told to call there, he said, "My God, it's the wife. I'm a papa." Once on the phone, he learned that he was, sure enough, a papa but good—twins.

In order to properly understand the workings of the radio system, one first must visualize the scope of its operations and the points of control. Radio transmitting and receiving sets are installed at each of the 10 ticket offices, seven maintenance buildings, seven tunnels, 26 police patrol cars, Commission automobiles, Turnpike state police headquarters at Midway, the state police headquarters in Harrisburg and the main office of the Commission in Harrisburg.

(TURN TO PAGE 138, PLEASE)

The Lisle Pin Hole Hone you've been waiting for!

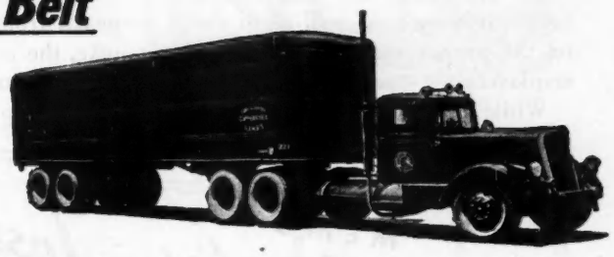
The same fine Lisle Hones you depended on before the war are again in production. Full output has not as yet been achieved, as the greater share of our equipment is still producing vital war material. • However, we are manufacturing enough of these popular Hones to make delivery in a reasonable length of time. Orders will be filled in rotation, so those received now will be assured of the earliest shipment possible. So we advise placing your order now. Free circular and prices on request.

Lisle QUALITY TOOLS

LISLE CORPORATION
Box 1017 • Clarinda, Iowa

Order a GATES TRUCK BELT!

Why expect a "Passenger Car" Fan Belt to Stand Up in TRUCK SERVICE?



You would never for one minute expect a passenger car tire to stand up in service on your trucks or buses. Naturally not, because you know that on trucks and buses tires have a tougher job to do—a bigger, stronger, more rugged tire is naturally needed.

And just the moment you think of the matter, you realize at once that exactly the same facts apply to belts.

A typical passenger car belt, for example, carries a 3.8 horsepower load. The belt on a regular truck must transmit 13 horsepower to turn the fan, pump and generator. In addition, trucks and buses run longer hours—often 24 hours a day. They must change speeds as many as 600 times a day with rapid acceleration, abrupt deceleration, stops, starts and idling—all of which put a strain on truck and bus belts far greater than a passenger car belt ever has to stand.

Is it any wonder that big operators by the hundreds are turning to the one belt that is specially engineered for this extra heavy service—the Gates TRUCK Belt.

The ONLY Belt Especially Made for TRUCKS and BUSES

No wonder it gives 50% to 80% LONGER WEAR

Read the letters reproduced on these pages. They tell you how practical, experienced, hard-headed operators are getting 50% to 80% longer belt wear since they began using the Gates TRUCK Belt. More important they tell you how much valuable operating time they are saving through fewer road failures and fewer delays for servicing.

If you are interested in keeping your trucks and buses operating most efficiently and economically, call your jobber today and tell him to send you a trial order of Gates TRUCK Belts.

Hundreds of BIG OPERATORS say "50% to 80% Longer Wear"

NEWARK, N. J.

"CUTS COSTS IN HALF"

"Really tough service on our milk trucks played havoc with belts until we installed Gates Specially Engineered Truck Belts. We are now using only half as many belts as before—and saving a lot of time previously spent on belt adjustment."

—Bloomingdale Dairy Co., Inc., Edwin R. Fantel, Maint. Supt.

MILWAUKEE, Wis.

"FAR SUPERIOR"

"Your specially engineered TRUCK belt is now in use on our entire fleet. It is far superior to any belt we have ever used."

—Advance Express Co., Dave Winters.

SACRAMENTO, Cal.

"We installed your Series 'T' Black Truck Belt when it was first placed on the market and it is giving approximately 90% longer service than even your pre-war belt."

—Gibson Lines, W. T. Smith, Shop Supt.

"90% LONGER SERVICE"

GATES Jobbers NOW Have Stocks to Serve You!

THIS IS A Gates PRODUCT

The GATES RUBBER CO., Denver, U. S. A.

World's Largest Makers of V-Belts

TURNPIKE'S TWO-WAY RADIO AIDS TRUCKERS

(CONTINUED FROM PAGE 134)

When a message is transmitted all receiving points along the network hear it simultaneously. An automatic recording is made of each message. These recordings are filed away for future reference, as well as to check on the proper use of the system by employees.

While the system operates along the same lines as other police radio systems, the Turnpike network differs in the respect that the ultra-short waves travel on a horizontal plane and, hence, shoot off into space at the horizon line, about twenty miles distant from the transmitter. Since it was impossible to erect ultra-high frequency antenna on towers high enough to clear all the mountain peaks from either end of the Turnpike, the radio engineers located and placed automatic relays or "boosters" spaced approximately every 20 miles along the 160-mile superhighway. These "booster" stations are situated on top of the mountain over each tunnel, except Rays Hill, and at the Midway police headquarters.

Realizing that readers of the COMMERCIAL CAR JOURNAL are, generally, interested in two-way radio communication systems, with a "weather eye" to using radio in their truck operations, the writer may well relate more details on the workings of this "over-the-road system."

The mechanism of every part of the relay system was made to operate without the benefit of human hands. In this respect radio history was made and details involved in the perfection of the relays embody engineering features never before achieved on such a large scale. First of all, due consideration had to be given to the design of the communication system so that it must be of such a character that the regular personnel employed on Turnpike would be able to operate it without technically trained operators or supervisors.

Then, the radio engineers were obliged to formulate a system that lacked any imperfections. Thus, eight different wave lengths were employed to accomplish this goal; two between 30 and 40 megacycles and the remainder over 116 megacycles. By the use of these high frequencies it was impossible to employ standard equipment, so the system had to be tailor-made to meet requirements. Problem after problem was carefully handled and solved by the RCA Laboratories in cooperation with the installation contractors, Raymond Rosen & Co. of Philadelphia.

Every precaution has been taken to guard against interruption to the smooth functioning of the system. Every piece of apparatus has a secondary power source, gasoline driven, which takes over instantly in case of a break. The relay stations on the seven mountain tops are steel-encased to make them tamper-proof. In actual practice, the act of sending a message through the network is split-second precision that amazes the average layman.

Many radio engineers believe that the future for this type of communication holds great prospects, to be employed by large manufacturing

(TURN TO PAGE 143, PLEASE)

MEMO
TO: Fleet Operators
SUBJECT: Preventative Maintenance
Install HANDY GOVERNORS on All Vehicles
SAVE 32% on engine repair
SAVE 26% on lubricant costs
SAVE 23% on tire maintenance
SAVE 15% on fuel
SAVE 37% on accident costs
SAVE 30% on brake maintenance
ARMY E NAVY
KING-SEELEY CORPORATION
ANN ARBOR MICHIGAN
MANUFACTURERS OF THE FAMOUS HANDY, HANDY VARI-SPEED AND HANDY VISIBLE ACTION GOVERNORS

TURNPIKE'S TWO-WAY RADIO AIDS TRUCKERS

(CONTINUED FROM PAGE 138)

set-ups, state and national forest control, inter-city police work, road construction contractors, trucking operations and hundreds of other required uses. In practical experience, the Pennsylvania Turnpike radio system has become an important function in dispensing of duties, traffic control, reporting road conditions during inclement weather, summoning tow and repair services or any of the six combination fire and crash trucks, many emergency calls, and of course, expediting hundreds of problems handled by the state police.

The Turnpike has gained the reputation from truckers as being the only highway in the world that virtually controls its road operations, providing safeguards against accidents, thefts, drinking, etc. Any person, or persons, planning to commit hijacking or a hold-up on the turnpike should be quick to recognize that the radio system would be a distinct menace to his activities. As a matter of fact, there has not been a single attempt at a holdup, nor a single case of hijacking, yet it is the heaviest traveled trucking route in America.

The American trucking industry may hopefully look ahead to the day when a national network of superhighways will become a reality. When that time comes, many innovations in trucking operations will be possible for control of the "over-the-road" equipment.

END

(Please resume your reading on P. 64)

Ergolyte Acquires Precision Mfg.

John H. Read, president of the Ergolyte Mfg. Co., Philadelphia, announced the purchase of equipment and inventory of Precision Engineering Co., Chicago. "Our plans for post-war progress and expansion in the manufacture of quality welding machines and welding equipment prompted the purchase," said Mr. Read.

William Dickey, former owner of the Chicago company, has been retained by the Ergolyte Mfg. Co.

Here's What's New in Hydraulic Units

TOWER LIFT with Low Initial Height

Here is the answer to a modern Tower lift—new simplified design, new engineering, new type construction and new low cost.

This new tower is a design achievement which permits improved body styling, has low initial height with extreme elevations. Tower is controlled from the lift platform which is operated by twin telescopic rams. These units can be adopted to meet your requirements—from the streamlined truck to the open back utility truck.

Patented

DUMP HOIST for ½, ¾ and 1 Ton Trucks

Here's a new, lightweight, high pressure hydraulic dump hoist which permits high speed dumping. Low mounting and low loading height, under 48". Two hydraulic rams offer utmost stability and enable operator to raise and lower dump while truck is in motion. No subframe . . . fewer "wear out" parts . . . ideal for hand loading. Designed for the lighter jobs, up to 2000 pounds payload.

Descriptive literature available. When writing please advise in which unit you are interested, Towers or Dump Hoists.

BIRD-WHITE COMPANY

DEPT. 4, 3119 WEST LAKE STREET, CHICAGO, ILLINOIS

PARCEL ROUTES WILL BE EXTENDED

(CONTINUED FROM PAGE 74)

chassis with a wheelbase of 102 to 113 in., an astounding change took place in truck economics. For instance:

A ½-ton truck with 120 cu. ft. of loadspace that cost 13 cents per cubic foot for license plates gave way to a ½-ton unit with 280 cu. ft. of loadspace that costs only 6 cents per cubic foot of loadspace for license plates.

Liability insurance took a similar tumble per dollar of payload carried.

The first costs of the trucks themselves, figured per cubic foot of loadspace, dropped 35 per cent.

Gasoline consumption per dollar of sales delivered dropped nearly 50 per cent, because of the greater value of the payloads carried in the extra loadspace bodies and also because the big body units often do in one trip a day what the low, small body trucks take in two bites.

In garaging, short wheelbase, big body units, with twice the loadspace, require only about half as much floor space as two of the longer conventional body trucks.

In the repair shop there is a similar economy of floor space and manpower.

At the loading platform, the larger loadspace can be loaded in less time due to the ease of walking into the body to arrange the load, whereas the conventional panel body necessitates stooping and bending constantly.

The routeman requires less time to get through traffic and time in working the load. Savings of 1½ to 2 hours a day are experienced. If a routeman's ime is figured at $1 an hour, this means savings from $2800 to $3700 during the life of the truck to devote to doing more business.

The economies of extra payload carried are something to ponder for the postwar dreamers. One user whose conventional panel units do only $350 a week, does $750 a week in his shorter wheelbase units with man-high, extra loadspace bodies (both on a ½-ton chassis). Carrying $400 extra payload a week means $124,800 extra payload during the life of a truck. Even at a mere 2 per cent net profit that means an *extra* profit of about twice the total cost of truck and body.

Some fields which formerly used heavy duty trucks for big bulky parcels, are able to carry such parcels in the large bodies of the light trucks, doing away with half of the bulk trucks.

During rush seasons, where it had been the practice to use helpers it was found that the ease of working in the higher body trucks defers the point at which a helper has to be added.

To offset shortages of gasoline and tires, some operators have doubled up two adjacent routes in congested areas and the two routemen work from the one truck with oversize body.

In house-to-house deliveries, some fleet operators had set a low limit on the investment possible in route trucks, but they have found that providing the routemen with man-high loadspace enables them to make more than 300 calls daily in place of the former 200 calls and thus the new

(TURN TO PAGE 146, PLEASE)

CENTRAL *UNIVERSAL* HOSE CLAMPS

POWERFUL
DEPENDABLE

A SINGLE LENGTH FITS OVER 100 HOSE SIZES

SEND FOR FREE SAMPLE
No. 44-12C

• ***Easiest to Use*** . . . Fastest clamping action . . . Quickly installed or removed without disconnecting the hose line . . . Can't strip or loosen; self-locking, leakproof, rustproof . . . Simple to use in hard-to-get-at places . . . Standard for U. S. combat vehicles and all civilian cars, trucks, farm machinery.

• ***Ideal for Service*** . . . Meets every service need . . . Can be used over and over again . . . Has plenty of take-up, even on synthetic hose . . . 100% universal; furnished flat . . . Reduces clamp inventory—assures having right size clamp on hand at all times, because one length fits so many different hose sizes.

CENTRAL EQUIPMENT CO. 900 S. WABASH AVE. CHICAGO 5, ILLINOIS

CONVERT YOUR FREE TRUCK SPACE INTO BILLBOARDS WITH MEYERCORD DECALS

FREE! TRUCK VISUALIZER

Visualizer contains outline diagrams of body types, cabs, rear doors, tops, visors, side panels, etc., for sketching and arranging trademarks, lettering, etc. Also includes important data describing the most effective use of the free advertising space on your trucks. Send for your free copy today.

Truck decal illustrated is reproduced by courtesy of General Mills, Inc.

Here is a practical demonstration of "Rolling Billboard" advertising effectiveness . . . told with excellent poster technique through the powerful medium of free truck space—and Meyercord Truck Decals. Companies that SELL advertising space on their trucks charge as high as $240 per truck per year. Multiply this amount by the number of trucks in *your* fleet—to learn the value of *your* "Rolling Billboards" to advertise *your* product or service. Meyercord Decals are a durable, weather-tested method of truck decoration. They're economical for a dozen trucks or a thousand. Any design, in any size or colors, can be reproduced at a fraction of hand-painted cost, and fast overnight application saves labor, money, and idle truck time. Free design service. Write for Truck Visualizer. Please address all inquiries to Department **32-12.**

Buy War Bonds . . . and Keep Them

THE MEYERCORD CO.

World's Leading Decalcomania Manufacturer

5323 WEST LAKE STREET • CHICAGO 44, ILLINOIS

PARCEL ROUTES WILL BE EXTENDED

(CONTINUED FROM PAGE 144)

economies have changed another old conception.

It is not too much to say that the whole theory and economics of frequent stop deliveries will undergo a still greater change after the war. Not so much because of any fantastic innovations in trucks but because we have learned to think of deliveries and costs in a new light. The light delivery truck grew out of the passenger car and that undoubtedly accounted for its mere 4 ft. 4 in. ceiling, for a driver 5 ft. 6 in. to 6 ft. tall to work in; likewise a narrow width and a short loadspace *a la* pleasure cars. It was hard to load and to work from. The vast number of custom-built bodies on long and often heavy chassis bore witness to this fact.

It is inevitable that the truck industry will provide more efficient and more economical units and it seems just as inevitable that postwar advertising and enterprise will spread products and services over ever-widening areas as truck producers evolve newer, better and more economical units in a land that never has been bound by limiting theories and never will be so long as America is America.

END

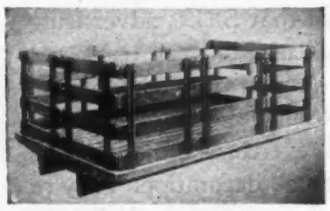
(Please resume your reading on P. 76)

ANTHONY HYDRAULIC TRUCK EQUIPMENT

Six wheelers and heavy duty trucks.

For short and long W. B. chassis.

Special for wooden bodies.



Stake or platform bodies.

Solves manpower problem.

"SUPER" HYDRAULIC HOIST DUMP BODIES
sizes 5 to 30 ton capacity.

●

MODEL "ZB" PLATFORM HOISTS
make dump bodies out of flat-bed, stake, or grain bodies.

●

"STAKE BODIES" "PLATFORM BODIES"
Lengths up to 20 feet.

●

"LIFT GATE"
HYDRAULIC tailgate lift for loading truck van bodies, platform bodies, etc. One man does the work of three!

Write or wire for literature and prices Nation-wide Sales and Service

ANTHONY CO.
STREATOR, ILLINOIS

ARMY E NAVY

F. A. Hoyt, northern California zone manager for GMC Truck and Coach, signs up two GMC Truck men as new dealers for San Francisco territory effective Nov. 1. Left to right, Hoyt, O. M. Brede, formerly national parts and service manager, and E. S. Todd, formerly eastern regional service manager

Rayon Cord Predicted Standard for Postwar Truck Tires

Use of rayon cord in the manufacture of synthetic rubber truck tires has increased performance as much as 375 per cent over those made with cotton cord, according to Dr. Sidney M. Cadwell, director of tire development for U. S. Tire and Rubber Co. Speaking before the Engineering Society of Detroit recently, he predicted that practically all truck and bus tires will be made with rayon cord in the future.

Dr. Cadwell pointed out that because rayon cords have more tensile strength, they need not be so thick as cotton cords, with the result that the tire runs cooler, reducing the number of failures from excessive heat. Nylon cord, he said, is even better than rayon, but its increased cost will make it unprofitable for postwar use in anything but airplane tires. He also predicted that for passenger car tires, cotton cord will continue to be used in the postwar period, because of the higher cost of both rayon and nylon.

Forget fuel line Failures

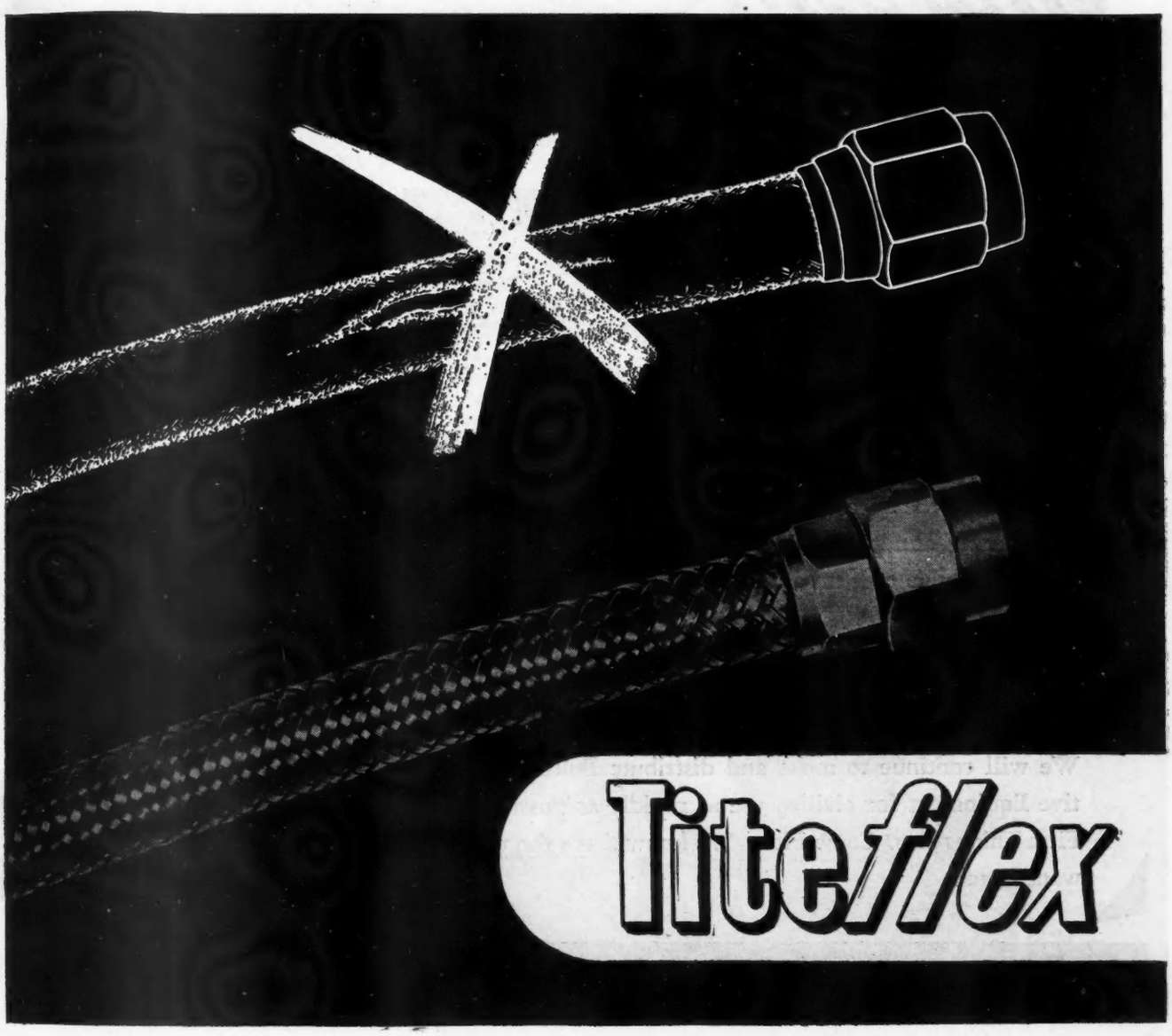
. . . IN HEAVY-SERVICE INSTALLATIONS

WHY DO FUEL LINES FAIL? Oil lines and air lines . . . on trucks and busses?

- They fail through vibration . . . through heat . . . and cold . . . through destructive chemical action on nearly all types of materials.
- But flexible lines of Titeflex last longer . . . and for reasons just as obvious . . .
- First . . . Titeflex is *all-metal.* Engine heat has no effect on it . . . and it can't be damaged by oil, gasoline, or water.
- Second . . . the all-metal convoluted core and woven-on metal braid covering of Titeflex provide a soft, springy resiliency that simply "eats up" vibration.
- Third . . . Titeflex is really *tight.* Being *all-metal* . . . without packing in joints . . . it's inherently leak-proof.

As a manufacturer, you'll want to specify Titeflex as original equipment. As a fleet operator or maintenance man you'll want to use it for replacing other type flexible lines on all heavy-duty installations. Specify Titeflex — for flexible lines that last longer.

TITEFLEX, INC.
525 Frelinghuysen Avenue
Newark 5, N. J.



NEW ANGLES ON ACCEPTED SAFETY AIDS

(CONTINUED FROM PAGE 51)

prehensive to affect such diverse individuals.

A tendency to over-simplify a program leaves many drivers unaffected. It's much easier and seemingly more measurable to organize preventive maintenance, design highway controls and pass laws, but "men are not killed by curves, hills or dead-end streets. They are not killed by collisions at 'dangerous points,' which conveniently and usefully may be so designated but a human hand guiding the car and a human foot on the accelerator are an inescapable element in every case."

Obviously then, every effort should be made to properly influence the driver while at the wheel. An accident happens when people drive off highways; but the important consideration is what makes them drive that way and how can we stop them. To stop them we must cause them to think of staying on the highway and to remember to do the things which will keep them there.

The Foundation

In the administration of a program designed to create and hold driver interest, the safety director or supervisor has certain obligations.

1. He should be human. Drivers should be treated not as numbers on the payroll, nor units in accident statistics, but as fellow humans with aspirations and needs as legitimate and important as our own. This is a prerequisite to obtaining respect for his safety program.

2. Be a good listener. It will be necessary to talk with many drivers. Give them opportunity for free expression. Substitute instruction for criticism, as often as possible. As the driver explains his actions, draw him on with a simple and frequent "why." You'll really learn to know him if you let him learn that he can talk to you.

3. Be factual. Withhold decisions until you have the facts. This he'll recognize as justice. If you are not sure he was at fault, don't treat him as if he were. He'll rightfully think you're unfair.

4. Be courteous. Punishment can be meted out without fire and brimstone. He'll be more likely to see the reasons for your action, more likely to correct his errors.

When you have laid the groundwork of sound employee relations, you can proceed with your program with reasonable hope for its success. After all you will be rated not for your technical knowledge but for your ability to use it in obtaining the desired performance from your drivers.

New Angles for Interest

The methods of creating and holding driver interest in safety to be presented in the following paragraphs are only a sample of the many in use.

1. *Bulletin Boards.* After the board has been placed where it is most likely to attract attention, its use should be carefully controlled. All material should be examined for consistency and correlation with your program. Interest will be increased by the de-

(TURN TO PAGE 150, PLEASE)

THE War Effort definitely comes first at Fulton. We feel especially privileged in being able to produce a great variety of special parts and equipment absolutely essential to the successful prosecution of the war. Fulton engineering and production resources are whole-heartedly devoted to this task on an all-out basis.

In addition, we have produced limited quantities of trailer couplings, accelerator pedals and the new "44" Fulton Electric Defroster.

We will continue to make and distribute Fulton Automotive Equipment for civilian use as rapidly as possible. But First Things *must* Come First. We know that's the way you want it, too.

THE FULTON CO. 1912 South 82nd Street Milwaukee 14, Wisconsin

Now... another VAN NORMAN "News-Beat" in Crankshaft Regrinders

Features of the New VAN NORMAN NO. 666

- *Precision Spindle Unit,* proven in operation on hundreds of the larger No. 111 machine. Rigid ball and roller support for frictionless rotation, micro-accuracy, and finish. No warm-up needed.
- *Instantaneous Workhead Control:* Multiple-splined, oilless type clutch supplied as standard equipment.
- *Table Traverse:* Slow hand-feed of ¼" per wheel-revolution for cheek and fillet grinding, and fast hand feed of 2" for rapid traverse between mains and throws.
- *Rapid Wheel-Slide Approach:* Slide is backed out of the way or brought up to within a few thousandths of the work. Then micrometer-wheel picks up the feed for micro-sizing.
- Also Van Norman's shaft-holding fixtures, movable tailstock spindle, and other exclusive features.

...the NEW NO. 666

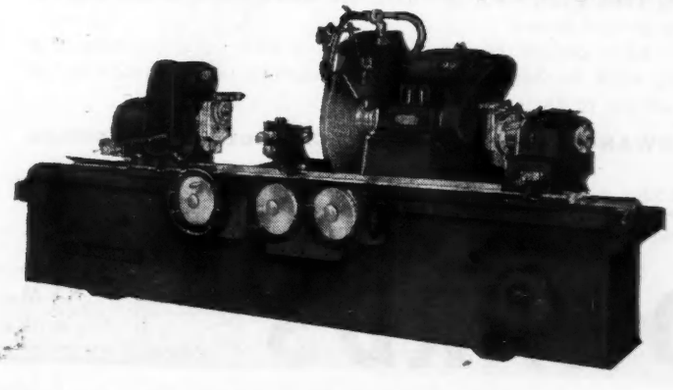
for Greater Speed and Accuracy on Shafts up to 48"

Again Van Norman makes the news in Crankshaft Regrinders, this time with the No. 666 . . . new running mate to the heavy-duty No. 111 which is now in use *and in increasing demand* all over the U. S. No. 666 is the *supplementary* machine needed to team up with the No. 111 in large shops. And it is the machine for branch shops, for wholesalers handling car and truck work only, and for specialized motor rebuilders. No. 666 is the fastest machine of its capacity (48"; 20" throw) . . . weighs over 4 tons. Delivery on WPB 1319s. So see your jobber or write Van Norman *right now.*

VAN NORMAN CO. (Automotive & Aircraft Service Equipment Div.) Springfield 7, Mass.

"It pays to Van Normanize"

with the Complete Heavy Duty-Line



NEW ANGLES ON ACCEPTED SAFETY AIDS

(CONTINUED FROM PAGE 148)

velopment of posters using your own vehicles and men as models. Tie-in material supplied by outside agencies with supplementary notices or bulletins. General bulletins concerning nation-wide experience at intersections, with school children and pedestrians can be localized and made more effective. To illustrate: On a colorful poster depicting a jaywalker and citing the pedestrian death rate, we wrote "Even though pedestrians make a good target, the law provides no open season. Let's fail to hit everyone of them!"

Change the board layout at different intervals. Have blank days to attract attention to changes. Remove defaced notices and posters. The bulletin board is one of your safety publicity agents. Use it as skillfully as the manufacturers do to create public demand for their products.

2. Give all possible publicity to the desirable accomplishments of your drivers.

a. Maintain posted honor rolls. Demonstrate the high regard you have for accident-free drivers by posting cumulative records of your drivers, i.e., date of employment, name, total accidents avoidable and unavoidable, date of most recent accident. If conditions require more accurate comparison, drivers can be grouped by location, routes, mileage between accidents. You might find that the drivers are as interested in their records as baseball players are in the batting averages. It might attract some of the attention the drivers now devote to the daily racing form. (In time they might even develop a "book" on their fellow workers' performance.)

b. Letters from the public or your customers commending a driver should be publicized. An executive of the company might well add his appreciation in a letter to the driver with a copy posted on the bulletin board.

c. Publish commendations of drivers whose accident records have improved.

3. Use competitive skill tests. Contests between drivers using the closed course test or road tests should increase interest in good performance.

4. Photographs and records of equipment given unusually good care by drivers should be displayed. One operator displays tires with name of driver and attained tire mileage.

5. Publicize hobbies and extra-job skills and attainments.

6. Films. Considerable progress has been made in the past five years in the development of commercial vehicle safety films. Such films as "Defensive Driving," "The Man Behind the Wheel" can be effectively used to train new drivers and to retrain accident repeaters.

7. Group Meetings.

a. Periodic meetings of the driver personnel with attendance of company executives and supervisors should be designed to give special recognition to the safe drivers. Those drivers should be entertained and commended. Distribution of awards should be arranged with great care in keeping with the emphasis you have given to safe performance. If the

(TURN TO PAGE 152, PLEASE)

SIGNAL CORPS PHOTO

● Yes, the tune, "THE CAISSONS GO ROLLING ALONG" still rings true. In battles of every American war, the Artillery has made it possible for the Infantry to advance faster and with fewer losses. In this war the Artillery works with the Air Corps and Tank Destroyers to soften the enemy . . . pave the way for the ground forces.

They are the targets for enemy artillery and bombers. But they stick to their guns—and will continue to live up to the fine tradition of their name.

EDWARDS IRON WORKS, INC., South Bend, Indiana

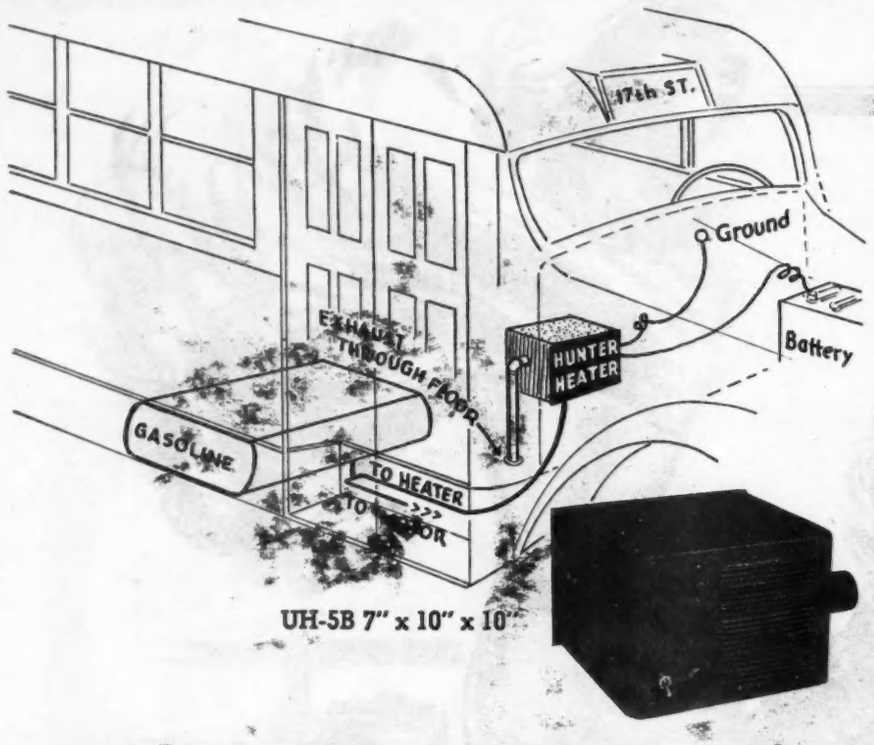
★ Edwards is making a sincere effort to contribute its small share in helping these troops . . . and all of the United Nations . . . with the materiel they require. Semi-trailers for combat use are, naturally, included.

EDWARDS SEMI-TRAILERS

"He's the first one I've met with a new 'line'—
he must be a Weatherhead Salesman!"

THE WEATHERHEAD "LINE" · FITTINGS · FUEL LINES · DRAIN COCKS · DASH CONTROLS · BRAKE PARTS

CONSTANT-DEPENDABLE



UH-5B 7" x 10" x 10"

BUS HEATING

HUNTER GASOLINE BURNING BUS AND CAB HEATERS are independent of engine operation.

The reason is that a Hunter Heater connects directly to the main tank, pumps its own fuel with a built-in Auto-pulse pump.

You can see by the schematic drawing above that installation need take but a few minutes. Four bolts, a connection to the gasoline tank, wires to the battery and ground, a hole for the exhaust.

Blower will not overload a good generator and battery set-up, can even be operated when engine is cut off.

Combustion is "Sealed-in-Steel", exhausts to outside of vehicle. Heat volume can be positively regulated, and is constant regardless of outside temperature.

DISTRIBUTOR TERRITORIES STILL OPEN . . . WRITE NOW FOR FULL INFORMATION

BULLETIN HG-4 Describes all types of Hunter Heaters

HUNTER AND COMPANY

Transport Equipment

CLEVELAND • OHIO

1560 EAST SEVENTEENTH STREET

NEW ANGLES ON ACCEPTED SAFETY AIDS

(CONTINUED FROM PAGE 150)

driver doesn't leave the meeting with a rightful sense of pride in his record, the meeting has failed. This meeting should not be diverted to elementary instruction or unfavorable criticism of the drivers who did not earn awards. Make it the champion driver's night exclusively. Every activity and remark should be appreciative and commendatory. Public officials and union representatives, as guests, will give the driver an increased sense of accomplishment.

b. Group meetings of accident repeaters. As your records of accidents classify drivers, interest in prevention can be established by refresher courses for these problem drivers. Instruction by films and by lectures and discussion to small groups should correct driving errors. Give the drivers an opportunity to discuss the subjects so that you can locate the points of difference in knowledge and ideas.

c. Periodic meetings for general discussion of your safety program. The average driver thinks he can help the safety program if given an opportunity to tell the boss what he knows about such things as the maintenance program, driving schedules, award plans. Although these meetings should appear unrehearsed, they should be carefully planned. In an air of informality and sincere man-to-man attitudes the driver will talk.

8. Personal Work. With every possible form of activity to create and hold driver interest, you'll always find the need of personal work. There is no substitute for personal contact. Get to know your drivers by name and record. The safe driver sometimes slips away from a good record by neglect. It is easier to know the accident repeater. We hear little about the safe driver until an award list is prepared. If he stops to talk to you about his record, unfamiliarity might appear to be disinterest. It's true that a small percentage of drivers have most of the accidents but they don't have all of them. The infrequent accidents of the larger group are likely to be costly in life and property.

9. Develop a company policy and

(TURN TO PAGE 154, PLEASE)

MERCHANDISE IS ON THE MARCH

Hats off to that valiant army of commercial truckers whose efforts to supply the home front have eased the sting of wartime shortages ★ But for the never-say die philosophy of this organization and the recognized stamina of the finest rolling stock in the world, this country would have been faced with a condition which, by comparison, would have dwarfed our current inconveniences ★ We, of Bendix-Westinghouse, are not without pride for the heavy role Air Brakes and Pneumatic Controls have played in this Victory on the home front. More especially, we are grateful for those countless, unsolicited statements from operators who credit Bendix-Westinghouse Equipment for a major share of their accomplishment in keeping units rolling, safely, efficiently and economically ★ Naturally, in view of the record, you will be interested in the many exclusive advantages this world standard of safety holds for you. To relay this information, a nationwide chain of Bendix-Westinghouse Distributors is waiting and ready to survey your individual control requirements.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY . . . ELYRIA, OHIO

Bendix-Westinghouse

AIR BRAKES

AND PNEUMATIC CONTROL DEVICES

IT IS SIGNIFICANT THAT AMERICA'S FINEST MOTOR TRUCK FLEETS ARE EQUIPPED WITH BENDIX WESTINGHOUSE AIR BRAKES

NEW ANGLES ON ACCEPTED SAFETY AIDS

(CONTINUED FROM PAGE 152)

practice of appreciation and recognition of safety. Beginning with the employment interview, and continuing all through employment, safety should be inseparable from operation or production. Stress that attitude and show appreciation of its attainment.

All employees are inclined to consider themselves insufficiently appreciated. The president of a corporation would like greater recognition of his accomplishment by his board of directors. The good things we do we are likely to consider more than the requirements of our jobs and if they are not appreciated we tend to discontinue doing them. Praise is a dish upon which even the so-called modest person gorges himself.

END

(Please resume your reading on P. 52)

YOUR TIRE CHAINS are still fighting on the world's battlefronts

★ **Twenty-four hours a day, in almost every part of the world, the materials formerly used to manufacture your tire chains are still working for our victorious forces.**

CM CLAW AND DREADNAUGHT TIRE CHAINS

have proven themselves "tops" in war as they have in peace. We feel confident they'll be back to their peacetime job soon.

COLUMBUS-McKINNON CHAIN CORP.

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

Plants at Angola, N. Y., St. Catharines, Ont., Can. and Vereeniging, So. Africa

Ford to Build 29,525 Vehicles for First Half of 1945

Automotive assembly lines of the Ford Motor Co. never have stopped producing. Until last April, when quota production of trucks and buses for civilian purchase was authorized, the entire intensified output of the Ford Motor Co.'s automotive assembly lines went to the armed forces.

Now, even as reconversion of all Ford plants awaits the go sign from the government, trucks and buses and 30 types of engines are being produced. Most of the engines still are being made for the armed services, but a few are going to civilians.

Since April, Ford has built 17,655 truck and bus units. Of the 1944 quota, 10,207 still are to be built.

In the first half of 1945, the company will produce 23,238 medium units, of which 1700 will be 194-in. school bus chassis, 12,923 158-in. truck chassis, and 8615 134-in. truck chassis. In addition, 6287 light units will be produced.

The Rouge plant is working on a 1944 schedule of 2226 transit bus chassis units. These are necessary to replace public transportation units failing under wartime loads.

Ford's military truck production for 1944 includes 33,272 units for the Army and 5422 for the Navy.

Throughout the more than two-year war period, engines have been produced by the hundreds daily in the Rouge plant. The unique assembly lines in the Motor building have been carrying their pistons, connecting rods, crankshafts and crankcases in a never-ending stream.

More than 700 engine units are being turned out each day, not including the now famous V-8 tank engine. This output includes Jeep engines and four-cylinder jobs, as well as V-8 and six-cylinder motors. Approximately 30 different types of engines, each different in some respect, are in constant production.

Approximately 75 per cent of all Ford trucks designated for civilian purchase are produced in the Rouge plant. Plants at Dallas, Texas; Louisville, Ky.; Edgewater, N. J., and Chester, Pa., manufacture the other 25 per cent.

The four branch plants named also are responsible for manufacture of military trucks, plus a total of approximately 6000 Jeeps a month.

Distinctive in color and in quality! That means every re-wire job done with Wiry Joe's new maroon ignition cable looks better—*and is better!*

Insulation having outstanding dielectric properties reflects real advances by Wiry Joe in the compounding of synthetic rubber. And Wiry Joe braids are made of soft, combed, or super-carded yarns of first quality—coated as many as twenty-four times with a special lacquer. This means an outer covering that assures maximum protection for the insulation—a covering that is highly resistant to heat, cold, gasoline, oil, grease, moisture, salt air.

Ask your jobber about Wiry Joe's maroon primary and high tension cable—it's the answer to many ignition problems. Look for the announcement of other Wiry Joe innovations soon!

Wiry Joe

AUTOMOTIVE CABLE

manufactured by

THE CRESCENT COMPANY, Inc.

Pawtucket, Rhode Island

√ Check the wire on every job!

MANAGEMENT MUST ORGANIZE

(CONTINUED FROM PAGE 65)

every day in the year. On the other hand, wherever organization of management exists, it has proved to be totally inadequate. True, there are any number of truck associations—local, state-wide, regional and even national—but most of these have one common weakness. They are usually "all purpose" organizations, devoted to the general welfare of the industry. They attempt to do all, or at least many things for their members; endeavor to further the interests of the industry along all lines. Labor, if considered at all, is merely one of many vexing problems.

It would seem that a factor that takes approximately 50 per cent of every revenue dollar might well come in for a little more specialized attention and handling. In a growing number of localities, this fact has been recognized and groups have been organized solely to deal with labor matters. While this is a step in the right direction, these groups deal only with local problems. There is no integration or coordination with other and similar groups in other localities. In many cases, such groups assemble only when a contract is to be negotiated and during the remainder of the year are practically disbanded. If any continuity of organization is maintained, it almost always is understaffed and underfinanced. Such organizations have no purpose or object to work *for*; they merely have something to fight *against*. Compared to the army of organized teamsters carrying out a strategically planned and victorious campaign, employers in the trucking industry resemble scattered and disunited bands of guerrillas fighting desperately but ineffectually on the defensive; the only purpose being to hold on and not be crushed.

Clear-cut Policy Lacking

The need for organization is so apparent that it is a wonder that it has not been met. Perhaps the chief reason militating against the setting up of such a group is the lack of a clear-cut policy. There can be no organization unless there is a common purpose or reason for it; and so far, the only common policy developed is the policy of resistance. This is so negative and so futile in the face of present legislation and governmental regulation that only the most reactionary and belligerent individuals would be attracted to joining an outfit devoted to dying in a group instead of singly. There are some—too many—such organizations already, and their lack of success is noteworthy.

To be successful an organization must have some better reason for its existence. It must have an ideal, something constructive rather than merely defensive. In the trucking industry this ideal will have to be revolutionary—based on fair dealing, consideration and right. There are a number of employers who already realize this fact, but until they are organized and successfully develop their policy on a wide front, it is going to be impossible to obtain labor's cooperation.

Labor cannot reasonably be ex-

(TURN TO PAGE 158, PLEASE)

HYGRADE REPLACEMENT PARTS — ENGINEERED FOR OLD UNITS

WHEN you rebuild a Fuel Pump or Carburetor with Hygrade Parts you know that the finished job will prove absolutely satisfactory—because Hygrade Parts are not "duplicates" but parts ENGINEERED FOR OLD UNITS—to meet the new tolerances created by wear.

The Fuel Pump Shaft Pin pictured here is a striking example of Hygrade Engineering. In many cases, when a mechanic replaces an old pin with a new one, he finds that the aperture has been enlarged by wear. Result—a loose fit—tinkering—and a poor job in the end.

Hygrade's Pin, made slightly oversize to a new tolerance, fits the enlarged hole snugly, forming a securely anchored shaft for rocker arm and linkage.

For a permanently satisfactory reconditioning job on Fuel Pumps and Carburetors use Hygrade ENGINEERED Parts in Contain-All Kits.

HYGRADE PRODUCTS CO., INC.
Replacement Parts for Carburetors, Fuel Pumps and Shocks; Speedometer Cable and Tips; Fuel Lines and Fittings.
35-35 Thirty-fifth Street
Long Island City 1, N. Y.

Hygrade Line AUTOMOTIVE PRODUCTS

REPLACEMENT PARTS by HYGRADE

ENGINEERED for OLD UNITS

FOR TRUCKS, TRAILERS, BUSES

Learn more about...

BRAKE DRUMS

by GUNITE

Quality proved... Cost-saving demonstrated!

WRITE FOR THIS NEW CATALOG

Nearly a million GUNITE Brake Drums, placed in the most exacting service, have proved their unquestioned quality and superiority. Records of users show actual and substantial cash savings over the operating cost of ordinary drums. GUNITE Brake Drums do not flex on cam and anchor sides. Fade out and roll away, caused by expanding brake drums, are prevented. Linings will not glaze or cook from excess heat with GUNITE *heat-controlled, self-lubricated* Brake Drums. GUNITE drums are supreme on any basis . . . cost per mile, lining life, brake efficiency, interval between adjustments, or any other way you want to gauge them. Learn about GUNITE Brake Drums . . . *and use them!* Brake stations — *write for our new distributorship offer!*

Over 950,000 Gunite Brake Drums have been made since 1928

GUNITE FOUNDRIES CORPORATION
ROCKFORD, ILLINOIS

MANAGEMENT MUST ORGANIZE

(CONTINUED FROM PAGE 156)

pected to cooperate in the present policy of resistance to labor's demands, and no amount of organization of employers can force it to do so. Labor can be expected to cooperate in the furtherance of a mutually beneficial policy, if there is an organization with which to cooperate. If such a mutually beneficial plan can be found, it should not be impossible to set up an association to support it. What, then, should such a plan or policy be?

Outline of a Plan

Certainly no one person is competent to set out all of the details, but at least a general outline of what should be an acceptable ideal may be determined by approaching the matter from the following angle. What *should* management want? The obvious answer, with which there can be no quarrel, is "*just and reasonable profits derived from dependable and valuable public service.*" See if that is not a fair statement. If an operator wants or expects more than "just and reasonable profits," he is greedy. If he is content with less, he is foolish. If he wants or expects to get his profits otherwise than by rendering a dependable and valuable service, he is inclined to cheat. If he wants or expects to obtain a part of his profits at the expense of labor, he is, to say the least, unwise.

Now what are the essentials for attaining this desire for just and reasonable profits? Valuable service cannot be rendered with dissatisfied, disgruntled, antagonistic help. Service cannot be dependable if it is subject to periodic strikes and tie-ups. Profits can be neither just nor reasonable if neither the value nor the dependability can be assured. It is indisputable, then, that the legitimate desire of management cannot be attained unless good labor relations can be established and maintained.

The maintenance of good labor relations should be, and doubtlessly is, the object of the Teamsters' Union and it certainly should be the object of management. The fact that the parties have failed to achieve this mutually desirable end is clear indication that a new conception of what constitutes good labor relations is needed. Both sides must abandon the outmoded idea that full and complete occupancy of the "driver's seat" is requisite; both must realize that there is room for a "helper."

Labor's Point of View

To determine what does constitute good labor relations it is necessary that labor's point of view be analyzed —as was management's—and the legitimate objects of labor defined. Whoever, outside the ranks of labor, attempts to state these points should be circumspect, indeed. Management's representatives have, on far too many occasions, given the wrong answer.

Despite some beliefs to the contrary, organized labor is not Communistic, Socialistic or any other similar "istic." It is made up of average American workingmen, with average American upbringing, im-

(TURN TO PAGE 161, PLEASE)

If you sell or use . .
BUS OR TRUCK HARDWARE
WE WANT YOU TO HAVE
THIS NEW CATALOG
HUNDREDS OF ITEMS IN THOUSANDS OF SIZES *Including*

Eberhard
HINGES
LATCHES
DOOR IRONS
DOOR CONTROLS
SEAT IRONS
LOCK HANDLES
SEAT PEDESTALS
REFRIGERATOR LOCKS
PANEL DOOR LOCKS
VAN BODY LOCKS
SLIDING DOOR LOCKS
LADDER HOLDERS
ETC.

You'll want it too, as it will illustrate, describe and explain the application of hundreds of items you specify, sell or use.

It's the type of helpful book you'll want at your right hand to aid in meeting the manifoldly increased demands for such equipment sure to follow the removal of war restrictions.

Write your request for a copy *on your company letterhead* and we'll send it promptly upon completion. Meanwhile write us about any current needs.

EBERHARD *Long Run*
TRUCK BODY FITTINGS
E
EBERHARD MANUFACTURING CO.
Division of the Eastern Malleable Iron Company • CLEVELAND, OHIO

MANAGEMENT MUST ORGANIZE

(CONTINUED FROM PAGE 158)

bued with average American ambition to better circumstance. These men want pleasant, decent working conditions, fair and friendly treatment, respect, a chance for advancement, and a rate of pay as high as can be justified—certainly high enough to provide food, clothing, shelter and other necessities, with a little left for enjoyment and security in these things.

These are the same desires that every individual has, be he the president of the company or its lowliest employe. The only difference is one of degree. No just person can quarrel with such ambitions.

The foregoing statements are only another way of saying that labor wants "life, liberty and the pursuit of happiness"—and it was to secure these things that labor, like the forefathers of this country, organized and rebelled. It is to secure the same things that management must do likewise. Tyranny, whether it be by state, industry or labor, must be deposed. Organization on the part of both labor and management is needed to insure that efforts will be devoted to mutual benefits rather than the exercising of unilateral power by the organized over the unorganized.

If organization for security and for the attainment of otherwise unattainable benefits is an old American custom, there is no need to fear un-American results. Just as the union of 13 colonies did not attempt to take over the British Empire, the Teamsters' union will not attempt to take over the trucking empire. But it is a safe bet that it will continue to fight for the things it wants until a reasonable peace can be made.

What labor really wants can be summarized in almost the same words as apply to management. It wants *just and reasonable profits derived from valuable and dependable service.* Indication that it wants more can readily be explained if a little honest introspection is used.

Labor Relations History

Management cannot be very proud of its part in the history of labor relations in the trucking industry. Neither can labor. But since the initiative must come from management, let us first look at that side of the picture. For years, before the employees became organized, a goodly portion of the profits of employers were derived by keeping labor costs down. Long working hours, no overtime pay, low wages, uncertain unemployment and similar conditions prevailed. Competition for business was keen and it was easier to keep labor costs low than to increase revenues through better service. It was the line of least resistance, since labor was docile and powerless as compared to the economic strength of shippers.

Few employers gave much thought to the matter of employe welfare; labor relations was unheard of.

Employes did give thought, however. And, seeing that only through organization could they better their lots, they organized. With organization came power—plenty of it—perhaps too much. Because it was unorganized, management became a

(TURN TO NEXT PAGE, PLEASE)

FROM LEAK TO LEAKPROOF

IN ONE EASY TREATMENT WITH K&W RADIATOR SEAL

Simply pour in a bottle of K & W Radiator Seal and in half an hour a leaky radiator is restored to top efficiency . . . requires no service labor . . . does not affect hose or thermostat . . . leaves nothing in suspension . . . is unaffected by anti-freeze after installation. Only one bottle is needed for cooling systems up to 24-quart capacity.

If K & W Radiator Seal doesn't stop the leaks you know you have a "shop job" that calls for the services of a competent radiator repair shop.

You buy K & W Radiator Seal on a satisfaction-or-money-back guarantee.

KERKLING & COMPANY
BLOOMINGTON, INDIANA

For quick, permanent repairs to cracked cylinder heads and blocks investigate
K&W METALLIC SEAL and MECHANICAL METHOD

MANAGEMENT MUST ORGANIZE

(CONTINUED FROM PAGE 161)

pushover. The tables were completely reversed, and just as management had previously obtained some of its profits at the expense of its employes, labor proceeded to reap its long delayed harvest at the expenses of management. In both cases, in many instances, the practices were unjustifiable. But in every instance, the practice was the result of organized power.

At the present time, the power of labor and the impotence of management are at a point where it is difficult to see any reason why labor should moderate the command it exercises. No doubt, wise and far-seeing labor leaders see and understand that it is inevitable that history repeat itself if labor's power becomes tyranny. However, it is understandable that the average union member or business agent sees only that times are good compared to the old days, and sees no reason for getting out of the driver's seat, or even moving over and sharing it. They, like the employers of a few years back, are giving but little thought to constructive labor relations.

What is there, however, to inspire solid, constructive thought among the members of the Teamsters' Union? Before management can expect thoughtful and considerate treatment of its problems, it must indicate a willingness to consider the problems of the other side. It cannot do this individually or in small isolated groups. It must do so in a voice that is unified and understood. The present small cries echoing throughout the land are confused, indistinct and at variance with one another. Unification is needed, and unification means organization.

Effects of Organization

If such an organization could be perfected, what a change could be expected! Representatives of a strong employer association devoted to the idea of establishing and maintaining really good labor relations, which are essential to the realization of management's proper objectives, could, in the first place, meet with labor's leaders on a plane of equality.

No one, at present, can speak for truck operators as Dan Tobin speaks for the International Brotherhood. Management has no counterparts of Dave Beck, Mike Cashell, Eddie Crumbock. These important Teamsters' officials have no one with whom to sit down and discuss industrial problems on a basis any wider than the limited scope of operations of a few companies. There is no reason why men who represent thousands and hundreds of thousands of employees should deal with employers of a few hundred. That's what local unions and their business agents are for.

Labor has its leaders. Management does not. There are many truck operators who are capable of the job—many in whom the industry could repose the same confidence that the teamsters place in Mr. Tobin and his lieutenants. But the ablest of men cannot lead unless there are followers and, if there be followers, cannot lead successfully unless the followers

(TURN TO PAGE 164, PLEASE)

"GRAF-FLOX" TREATED PISTON RING
OLD TYPE PISTON RING
Burd electric furnaces distribute natural graphite evenly; grinding particles are removed; colloidal graphite applied.
See poor distribution of carbon in ordinary cupola-iron rings. Note harmful abrasive particles on ring surface.

Now—

SEE ADDED *LIFE* IN PISTON RINGS

Now you can SEE why Burd "Graf-Flox" Piston Rings give many extra miles of life . . . why Burd equipped cars and trucks need no run-in (can be driven right from the shop under full load and speed). You can SEE from the independent research laboratory photomicrographs, that Burd electric furnace iron is scientifically controlled to have uniformly distributed natural graphite. You can SEE how an exclusive Burd process completely removes all abrasive metal particles which adhere to ring surfaces after grinding . . . that another special method applies deeply penetrating colloidal graphite. You can actually SEE why Burd "Graf-Flox" Piston Rings seat faster . . . are non-abrasive and do not scuff . . . how they are made self-lubricating to prevent scoring, seizing and sticking in grooves . . . why they add many extra miles to motors.

THESE 3 TYPES CORRECT VARYING DEGREES OF CYLINDER WEAR

BURD "Super Hi-Speed" Type Meets extreme conditions of cylinder wear.

BURD "Hi-Speed" Type For cylinders with taper of .003" to .007"

BURD "Quik-Seal" Type For Cylinders under .003" out of true.

"Graf-Flox" BRINGS THESE ADVANTAGES TO BURD PISTON RINGS

★ Quick Seating . . . No Run-in Needed
★ Non-Abrasive . . No Danger of Scuffing
★ Self-Lubricating . . . No Scoring, Seizing
★ Prevents Rings Sticking in Grooves
★ Adds Life to Rings and Motors.

BURD PISTON RING CO., ROCKFORD, ILLINOIS

BURD "Graf-Flox" PISTON RINGS

BIGGER AND BETTER TRUCKS

Help Solve Truck Shortage!

The number of trucks available is less important than their total payload capacity. If each truck could be readily altered to hold from fifty per cent to one hundred per cent more tonnage, it would go far to relieve the truck shortage.

This is possible in many cases where four-wheel trucks are used, by converting to six-wheelers with a Trucktor Third Axle. By such a conversion, it is often possible to double the payload. There are further advantages in the saving of rubber, because fewer tires are required for a six-wheeler than for two four-wheelers. There are further savings in manpower and gasoline required.

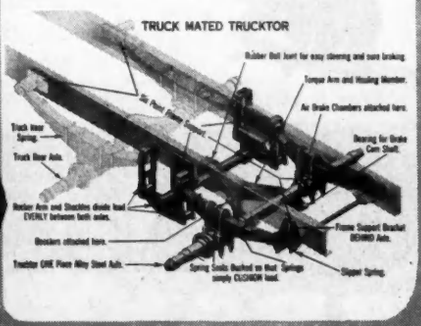
The gruelling tests of war have proven that Trucktored Six-Wheelers offer maximum hauling efficiency. In addition they offer a high degree of safety and maneuverability. These are points for the fleet owner to keep in mind when it is time to renew his fleet for postwar operations.

Write us or ask your truck dealer for the complete Trucktor story.

THE TRUCKTOR CORPORATION, 156 Wilson Ave., Newark 5, N. J.

TRUCKTORS TRUCK MATING PREVENTS EXCESSIVE TIRE WEAR

Since the Trucktor Third Axle is truck-mated to the truck, the trailing wheels track accurately without tire scuffing. Synchronized braking equalizes stresses on tires, preventing premature weakening. These and other facts are detailed in the Trucktor data sheet. Write for it.



ALL RESTRICTIONS REMOVED!

NO PRIORITY OR WPB CERTIFICATE REQUIRED FOR TRUCKTOR THIRD AXLES

Trucktor THIRD AXLES

MANAGEMENT MUST ORGANIZE

(CONTINUED FROM PAGE 162)

are organized and know where they are trying to get.

Management can learn much from labor. It is time it started to do so. It should determine a sound labor policy. It should organize. It should find leaders. It should support them. Labor does these things and is successful. Management fails because it does them not.

What Gompers Said

If and when these things are accomplished, it might not be a bad idea, as a prelude to better understanding, for the chosen leaders of both labor and management to make a pilgrimage to a too obscure and forgotten monument in Washington and jointly consider the words of wisdom graven thereon. For what Samuel Gompers said of his beloved labor movement is equally true when applied to an industry as a whole.

"So long as we have held fast to voluntary principles and have been actuated and inspired by the spirit of service, we have sustained our foreward progress and we have made our labor movement something to be respected and accorded a place in the councils of our republic. Where we have blundered into trying to force a policy or a decision, even though wise and right, we have impeded if not interrupted the realization of our aims.

"No lasting gain has ever come from compulsion. If we seek to force, we but tear apart that which united is invincible. There is no way whereby our labor movement may be assured sustained progress in determining its policies and plans other than sincere, democratic deliberation until a unanimous decision is reached. This may seem a cumbersome, slow method to the impatient, but the impatient are more concerned for immediate triumph than for the education of constructive development."

END

(Please resume your reading on P. 66)

Emmert Heads Warner Gear: Other Changes

Arthur P. Emmert, former vice-president in charge of manufacturing, has been named president of Warner Gear Division of Borg-Warner Corp. The company operates four plants at Muncie, Ind., employing 3500 persons.

In his new post Mr. Emmert succeeds C. S. Davis, Borg-Warner president, who has headed the Warner Gear Division since 1932. Mr. Davis has retired from the presidency of Warner Gear to give his exclusive time to the parent corporation in Chicago.

Other changes in the division include the appointment of E. S. Russey as vice-president and general manager, and the naming of J. O. Moore as works manager.

Mr. Russey succeeds John M. Simpson who, at his own request, was relieved of the active routine management of the company with which he has been associated since 1911. Mr. Simpson will serve as chairman of the supervisory board and as active consultant in administration and engineering problems of the division.

RAISE THE S.Q. ON YOUR CAR

- Exclusive asbestos-friction compound, molded on wire-grid back.
- Constant high co-efficient of friction throughout longer life.
- Astonishing freedom from adjustment.
- Precision machined for quick installation.
- Quick stops . . . but smooth . . . and with softer pedal.
- Most efficient braking performance under all conditions of service.

Yes, your shop *can* and *will* deliver higher S.Q. in every job with Grizzly Brake Lining.

Never was safe, dependable braking more important than now, when your equipment is rolling up hundreds of thousands of war-important miles. That's why you owe it to your drivers, your equipment, as well as to yourself, to install Grizzly, the brake lining that rates 100% in *Safety Quotient.

Grizzly—"the finest product of the brake lining industry"—has every essential quality (see chart above) to assure that extra-safety so necessary these days. If you aren't already using Grizzly, write for the name of your nearest Grizzly Distributor. Grizzly Manufacturing Co., Paulding, Ohio.

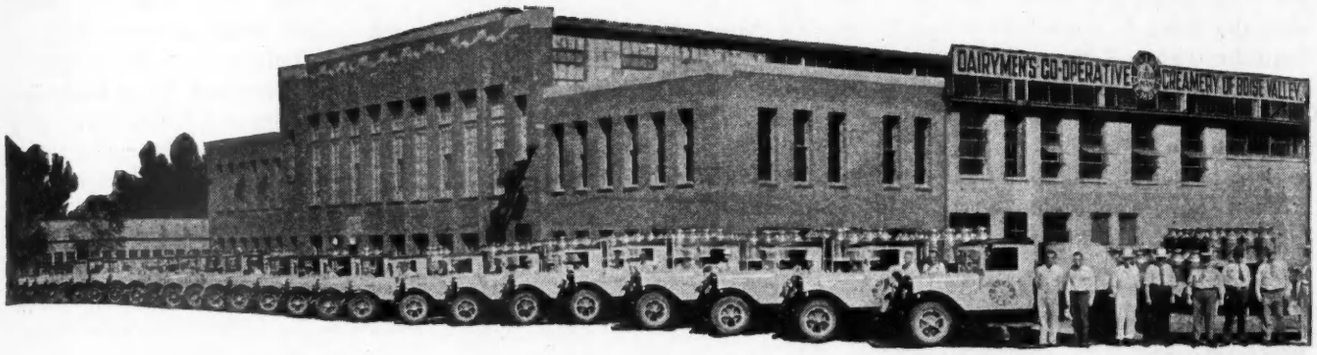
"Bear in Mind"

GRIZZLY

REG. U. S. PAT. OFF.

BRAKE LINING

Valvoline answers sludge and carbon problem



For Dairymen's Co-op Creamery of Boise Valley

Dairymen's Co-op Creamery of Boise Valley

TELEPHONE 134

Caldwell, Idaho

July 19, 1944

Valvoline Oil Company
2308 North Clarke Avenue
Portland, Oregon

Attention of Mr. George F. Peterson

Gentlemen:

We operate daily 32-1 1/2 Ton International Trucks hauling milk from producers to creamery — one truck delivering butter and ice cream in town, a Chevrolet panel delivery, and International pickup, and a Plymouth coupe. We use Valvoline HPO Oil in this equipment, find it entirely satisfactory, and recommend its use by any large fleet operator.

We have used Valvoline for several years. We are not bothered as much with sludge and carbon and our motors are running a lot cooler than they did before using this oil.

We manufacture approximately 6 1/2 million pounds of butter per year and 10 million pounds of edible milk powder. In cooling this large volume of product, we use five ammonia compressors with a total capacity of 175 tons of refrigeration. For the past 19 years, we have used Valvoline Ice Machine Oil in this equipment and have found it gives 100% satisfaction.

Very truly yours,

C. M. Carlson

C. M. Carlson
Manager

CMC:ln

Sludge, carbon and varnish become a bigger-than-ever problem to fleet operators under wartime conditions. Mechanics and drivers have to keep equipment rolling under overloads and at punishing low speeds; units are overworked and may not be available for regular maintenance.

There's one thing you CAN do to help your mechanics, help your drivers, and lengthen the life of your equipment: Invest in the BEST motor oils and lubricants you can get. To thousands of fleet owners, that means *Valvoline.* Valvoline Fleet Laboratory Service can cut your costs and stretch your motor miles—write us today.

VALVOLINE OIL COMPANY
580 EAST FIFTH STREET CINCINNATI 2, OHIO
New York-Chicago-Atlanta-Los Angeles-Vancouver
REFINERY IN PENNSYLVANIA

COSTS MORE TO MAKE—COSTS LESS TO USE

VALVOLINE

The 1st Pennsylvania Oil

QUIZ ANSWERS

CCJ Quiz on Page 70

1. a. Either a red stripe or a blue stripe would indicate synthetic rubber. Similarly, a circular red spot with the letter S indentifies a synthetic tire casing. Different requisites as to the installation and maintenance of the synthetic products necessitate the identification symbols.

2. b. If you were to go to the Fair grounds now, you would find between 4500 and 8000 vehicles . . . some awaiting reconditioning and others already repaired and ready again for service. Militarily, the lot would be called a "tactical and administrative pool." It is connected with the 1223rd Service Command Service Unit with headquarters in the former Bronx Coliseum, which has been transformed into a huge repair shop. Vehicles for repair come from all over the country, and others come direct from the fighting fronts.

3. c. Trucks that are damaged beyond repair are "cannibalized." The truck is dismantled to obtain spare parts for repairing other units. Sometimes enough parts from two or more badly shot up vehicles can be salvaged to make one complete unit.

4. a. The whole tank car—8000 gal.—would refuel just one B-29.

5. b. Controls on the M-29, a Studebaker product, have been simplified so that it can be driven with reins. This permits the driver to get out of the vehicle entirely when crossing a crevice or other particularly hazardous spot.

6. b. The M-7 is the tractor-ski car built by Allis-Chalmers. It has two skis in front and tractor treads behind. It was developed to rescue downed fliers in snowy regions and also to tow men and supplies in small trailers.

7. d. The odograph is an instrument that automatically plots the course of the truck. Working from both directions and speed, it can plot to any scale from 1/20,000 to 1/500,000. The odograph attached to a vehicle is used both for map-making and for finding an objective whose position in relation to a given base is known.

8. b. The meaning goes back to a "dose of the bull-whip" . . . which is exactly what the Axis nations need and what we are giving them. The term was first applied to the treatment of Negro voters in Louisiana, when they were flogged with a bull-whip. Just recently, the Army started to provide armored cabs for the operators of our bulldozers on the battle-fronts. Previously, the drivers were without any protection.

9. b. It's the Chevrolet-built armored car, a 14 ton weapon of great speed and maneuverability. "Jettison" gas tanks provide a 500-mile range without refueling.

10. c. 75 gal. of high quality gasoline. A single mechanized division of our Army will consume 18,000 gal. of gasoline an hour.

END

(Please resume your reading on P. 72)

Since the development of the cylinder hone a quarter of a century ago, HALL has been first in introducing the equipment for building and rebuilding all types of internal combustion engines faster, better and more profitably.

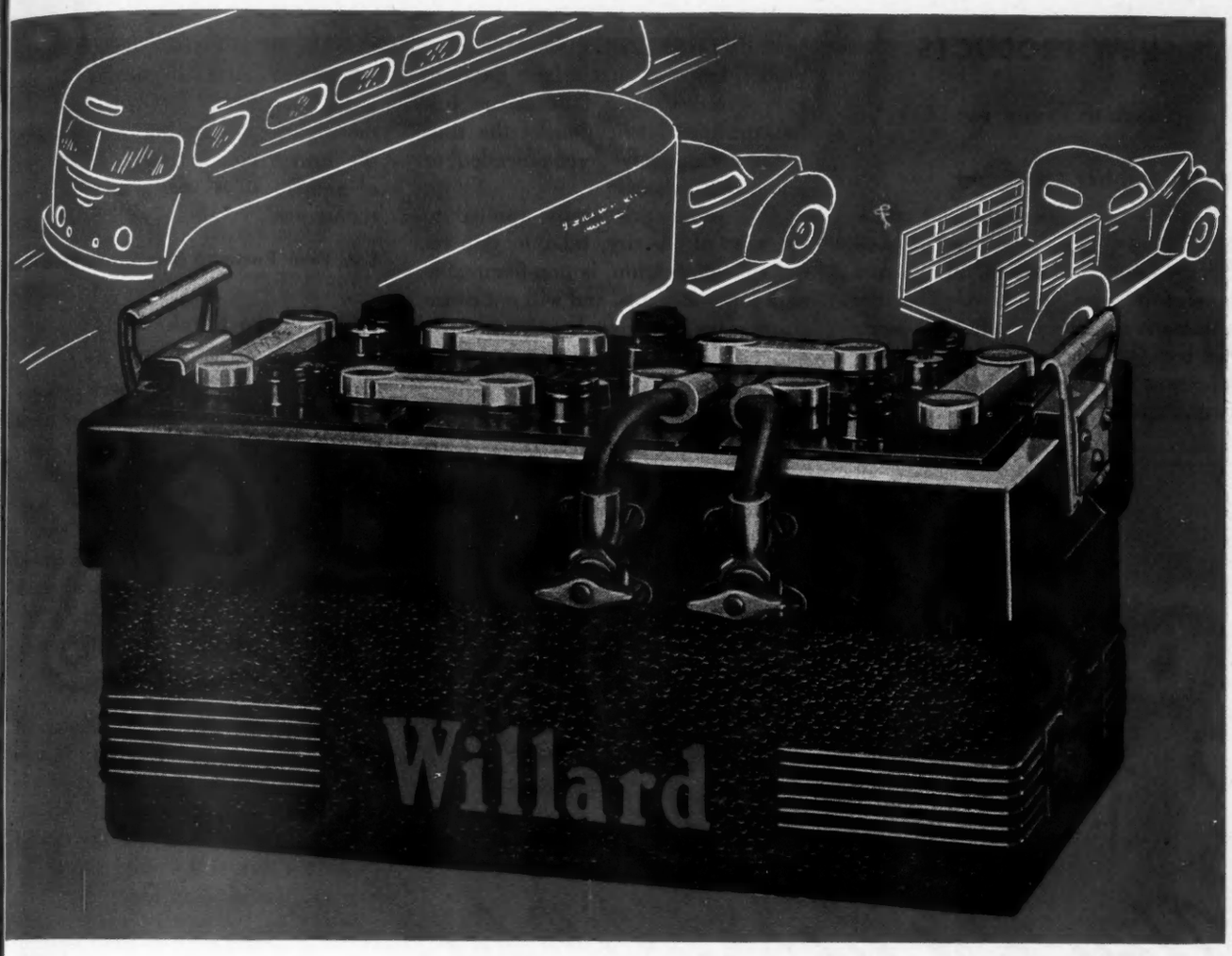
Right now HALL engineers are working with factory production and service engineers to the end that postwar engines may be produced and serviced with even greater precision and speed than those now in general use.

That's why, when the shooting is over and HALL equipment is again readily available, you'll find HALL still first in service to the industry.

THE HALL MANUFACTURING CO.
TOLEDO 7, OHIO

HALL

Curtis W. Keegin recently appointed manager of sales for the pump division of the Monroe Auto Equipment Co., Monroe, Mich.



WILLARD QUALITY IS BUILT-IN

The way Willard Commercial Batteries perform . . . their extra dependability, extra ruggedness and extra long life . . . is the natural result of the extra care used in building them. At Willard factories, quality is built-in . . . with tested, high grade materials, with the workmanship of men long trained in the Willard quality tradition and with rigid supervision. Every Willard Battery must pass 74 inspections. To buy Willards is to buy wisely . . . because you buy quality.

"SAFETY-FILL"
COMMERCIAL AND
DIESEL BATTERIES

Willard

Willards at war: in Tanks • Combat Cars • Jeeps • Walkie-Talkies • Ships—and in Cars, Trucks, Tractors and Buses at home.

Army-Navy "E", awarded to the Willard Storage Battery Company, Cleveland Plant, for high achievement in the production of war materiel.

. . . the power to carry on!

WILLARD STORAGE BATTERY CO. • CLEVELAND • LOS ANGELES • DALLAS • TORONTO

NEW PRODUCTS

(CONTINUED FROM PAGE 61)

P296. Rubber Lubricant

RuGlyde, a rubber lubricant manufactured by the American Grease Stick Co., of Muskegon, Mich., and heretofore used extensively by the automotive and oil industry, meets the requirements as the ideal "wet" lubricant for properly mounting tires, tubes, and flaps. Many tire manufacturers and major oil companies, knowing that a large percentage of today's tire failures are due to improper lubrication at the time of mounting, have recommended or adopted RuGlyde.

This product is easily applied to the area of the tire, tube, or flap requiring lubrication, is non-flammable and non-poisonous, and will not cause rusting on rim nor harm wheel or rim finish. It is an ideal lubricant for use in dismounting frozen or stubborn truck or heavy duty tires. The manufacturer claims the following advantages over lubricants of the paste soap type: RuGlyde combines the highest lubricating qualities with the lowest conductivity (1/200 that of soap); it is ready mixed; it is economical.

Use Free Postcard For More Details.

P297. Brake Block

Developed when the Army Air Forces called for a superior brake lining capable of stopping its heaviest bombers, a tremendous post-war market is seen for the "1492" brake block, manufactured by The Raybestos Division, Bridgeport, Conn.

This brake block is manufactured by a unique patented process which results in a product of unusual structure with a very high density, exceptional wear, temperature resistance, and stability.

The war-proven performance of this great friction discovery makes "1492" outstanding for post-war heavy duty use.

It is being produced at the rate of 15 tons a day and should shortly be available for civilian use.

Use Free Postcard for More Details.

P298. Self-Bonding Flooring

A flooring material is available that is self bonding. It can be laid over old concrete, cement, wood, or composition without adhesives or separate bonding agents.

This material, known as Stonoleum and made by Continental Asbestos Refining Corp., New York City, feels like rubber and wears like stone. A unique colloidal composition gives it greater resistance, not only to direct impact and load, but also to continuous vibration, abrasion, and other effects of traffic.

Another interesting characteristic is the "self healing" feature of Stonoleum. Small holes in a Stonoleum floor, such as those left when machines or fixtures are removed, disappear under traffic.

Laid Saturday, Stonoleum floors are ready to use on Monday. No chipping or chopping needed—no skilled labor. Any plant handy man can apply it with ordinary leveling tools.

Because it bonds without adhesives

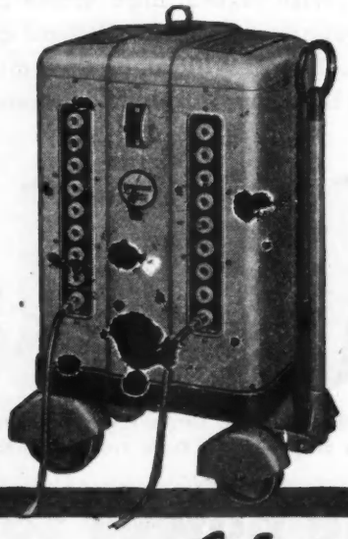
(TURN TO PAGE 170, PLEASE)

You get versatility

With MARQUETTE A. C. ARC WELDERS

Big jobs or little jobs . . . on cast iron, malleable castings, aluminum and practically every weldable metal . . . MARQUETTE machines take them all in their stride . . . delivering the same fast, low cost, flawless performance that they do on light sheet metal or the heaviest steel structures.

That's one of the reasons why MARQUETTE Welders are ideal for automotive repair. Cracked engine blocks, cylinder heads, damaged chassis members and body parts are made as good as new at a fraction of the cost and time needed for dismantling and replacement.



Buy the Best—Buy MARQUETTE

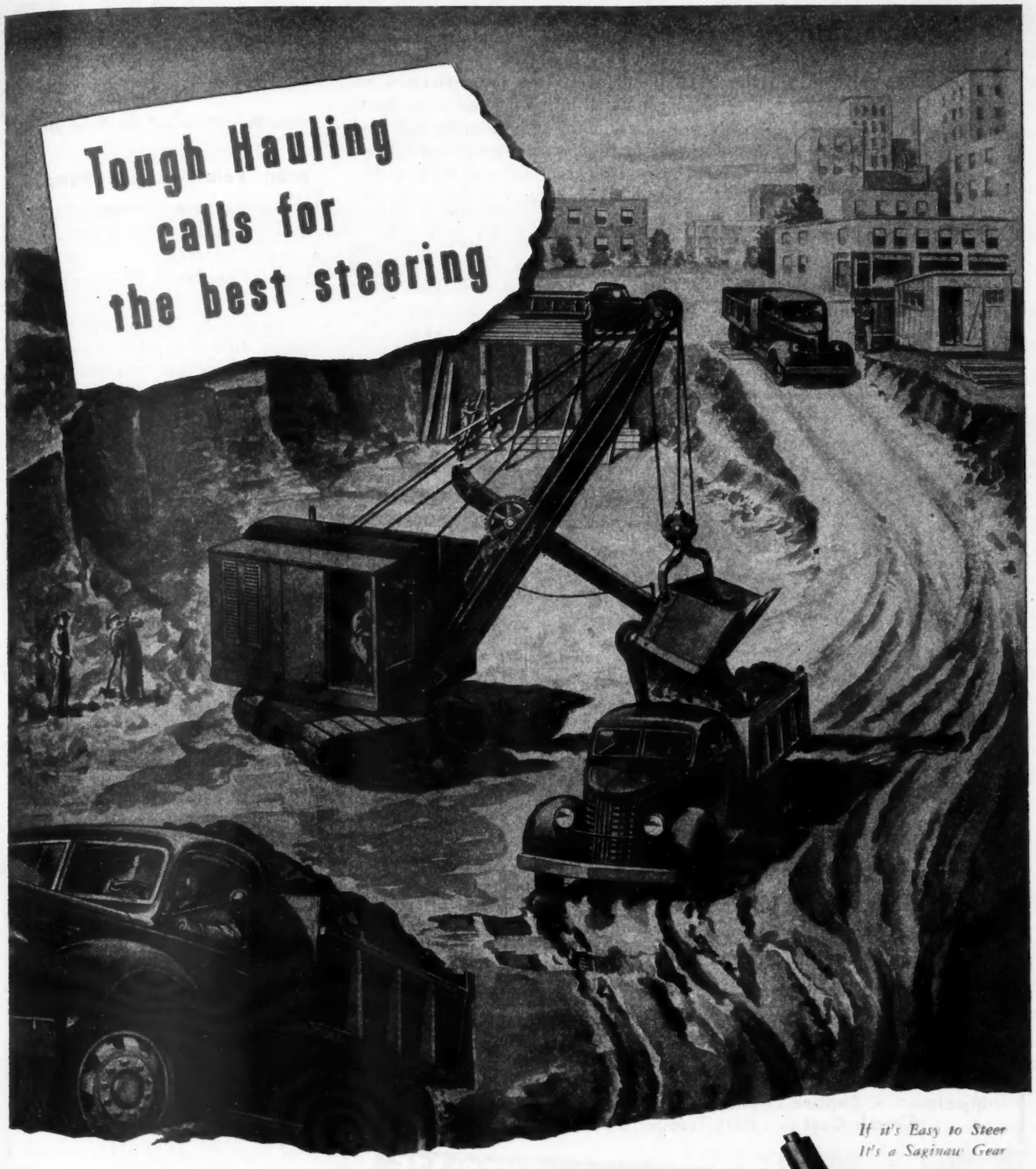
LOW INITIAL COST — LOW COST OPERATION—NEGLIGIBLE UPKEEP—NO "MAGNETIC BLOW" — COMPLETE EQUIPMENT—10 Models, 125 to 400 Amps.

Send for free, 24 page, Illustrated Booklet

MARQUETTE MFG. CO., INC.
Minneapolis 14, Minnesota

MARQUETTE
REGISTERED U.S. PAT. OFFICE

a.c. arc welders



If it's Easy to Steer
It's a Saginaw Gear

Reliability, ease of operation and efficiency are prime requisites of truck steering when the going is tough. In the difficult years of world rehabilitation, Saginaw steering gears may be expected to play a prominent role in America's hauling and trucking. The Recirculating Ball Nut Gear is both efficient and reliable. Whether used over the roughest terrain, in crowded traffic or on the broad highway, this gear cannot be rivaled for performance.

SAGINAW STEERING GEAR DIVISION

GENERAL MOTORS CORPORATION • SAGINAW, MICHIGAN

MANUFACTURERS OF STEERING GEAR ASSEMBLIES, STEERING LINKAGE ASSEMBLIES, UNIVERSAL JOINTS AND PROPELLER SHAFTS, DIESEL ENGINE AND AIRCRAFT PARTS • ORIGINATORS OF THE "BALL BEARING SCREW AND NUT" FOR ALL PURPOSES.

NEW PRODUCTS

(CONTINUED FROM PAGE 168)

or bonding agents Stonoleum also is an excellent patch material.

Use Free Postcard for More Details

P299. Cast Iron Flux

The Air Reduction Research Laboratories has developed a flux designed to promote uniformly successful tinning of cast iron prior to brazing. The manufacturer states that this flux, known as Airco Hi-Bond, overcomes the difficulties encountered in tinning cast iron, due to its graphitic nature, and makes possible highly satisfactory tinning of cast iron ,especially of high carbon and silicon content or low combined carbon analysis.

The flux does not take the place of the regular flux used for the actual brazing operation. Hi-Bond Flux may be applied as a water-mixed paste or as a powder sprinkled on the surface which has already been heated to the required temperature. It is packed in 1-lb. glass containers.

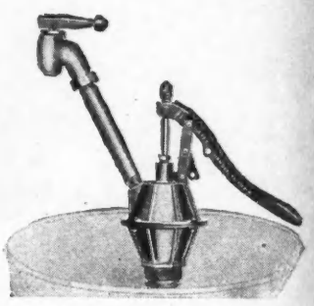
Use Free Postcard for More Details

P300. Volatile Liquids Pump

A new diaphragm-type pump specially designed for anti-freeze compounds, alcohol and other volatile liquids, has been introduced for use in fleet shops.

Among its various features is a handy filling spout with a positive shut-off valve that stops the escape of both vapor and liquid. An automatic drain-back permits complete draining of pump.

This pump is designed to screw directly into any drum, barrel or tank equipped with either a 1½ or 2 in. standard pipe thread opening. No



separate bung bushings are required. It is fitted with an adjustable suction pipe for use with 15-gal. to 60-gal. drums, including drums with ¾-in. opening.

The diaphragm is made of heavy cord fabric vulcanized between synthetic rubber and claimed not to be affected by any petroleum products, alcohol or other fluids. A diaphragm shock absorber prevents strain and damage. Valve seats are brass and rubber, valves are laminated bakelite. Fast pumping action delivers a maximum capacity of 15 gal. per minute on light fluids.

The pump may be locked to prevent unwarranted use. It is made by The Bishman Mfg. Co., Minneapolis, Minn., and is cataloged as Model No. 750.

Use Free Postcard for More Details

P301. Metal Safety Ladder

A new metal ladder of channel construction has been placed on the

(TURN TO PAGE 172, PLEASE)

LIST PRICE, $14.00
See Coupon for Dealer Cost

Nothing Cleans CARBURETORS FUEL PUMPS, ETC. Like...

GUNK H-S
(HYDRO-SEALED CARBON GUM DIGESTIVE SOLVENT)

Guaranteed to exceed the performance requirements of most recent army, navy and air force degreasing and decarbonizing compound specifications.

Available in handy steel kit containing steel dunking screen and dryer basket. Rinses easily with dry cleaning solvents or water. The only complete decarbonizing process in package form.

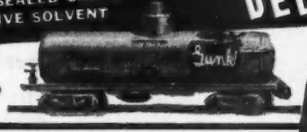
ALSO CLEANS and DECARBONIZES:

Spark Plugs . . . Motor Blocks . . . Valves . . . Pistons . . . Diesel Fuel Injectors . . . Airplane Engine Parts . . . Aluminum Pistons . . . Anti-Aircraft Guns . . . Heat Transfer Units . . . Oil Coolers

FOR CARBON CLEANING — SPECIFY... GUNK H-S HYDRO-SEALED CARBON DIGESTIVE SOLVENT

★ IMMEDIATE DELIVERY

5 Gallons or a Tank Car



Mfg. Chemists MALDEN MASS.

CURRAN CORPORATION

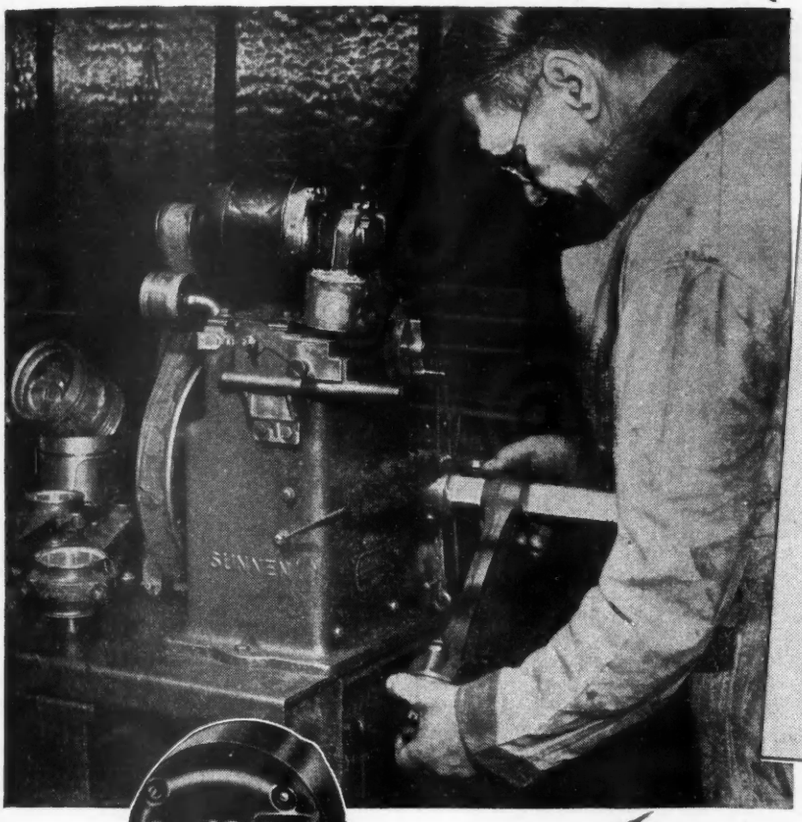
IF YOUR JOBBER DOES NOT STOCK . . . USE COUPON

Not in stock at my Jobber . . . attached to my business letterhead is my check, or M.O., on the condition that you ship me a 5-gallon size GUNK H. S. at *dealer's net cost*, $9.90—(add 10% west of the Mississippi) by FAST PREPAID RAILWAY EXPRESS.

Name .....

Address .....

SUNNEN BUSHING GRINDER
For
LONGER-LASTING Repairs



On Piston Pins
•
Spindle Body Bushings
•
Steering Housings
•
Generator Bushings
•
Water Pump Bushings
•
Distributor Bushings
•
Connecting Rod Bushings
—etc.

The coveted Army-Navy "E" waves over the Sunnen plant, evidence of the important part Sunnen equipment is playing in the war effort.

These are some of the more important jobs you can handle on the Sunnen Bushing Grinder. It will hone and finish any internal cylindrical surface from .480″ to 2.400″ in any metal or plastic except lead and babbitt.

Sunnen honed jobs assure longer service because they provide smooth, accurate "run-in" fits. There are no high spots to wear off quickly; taper, bell-mouth, and rainbow conditions are corrected. Accuracy within .0001″ is guaranteed.

You save time, too—the Sunnen Bushing Grinder is quick and easy to set up. Manpower is conserved because it does not require highly skilled labor.

If you are unable to secure a Sunnen Bushing Grinder immediately — take your parts to be honed to your jobber and have him do the work on his Sunnen Bushing Grinder.

Get complete information now on this precision method of internal sizing and finishing.

SUNNEN

SUNNEN PRODUCTS COMPANY, 7917 Manchester Avenue, St. Louis 17, Missouri

Canadian Factory: Chatham, Ontario

NEW PRODUCTS

(CONTINUED FROM PAGE 170)

market by the Duo-Safety Ladder Corp., of Oshkosh, Wis. It is made of an aluminum alloy, Duralumin, of sturdy construction, and light in weight. Other advantages include the fact that it is non-magnetic, non-sparking, and non-toxic.

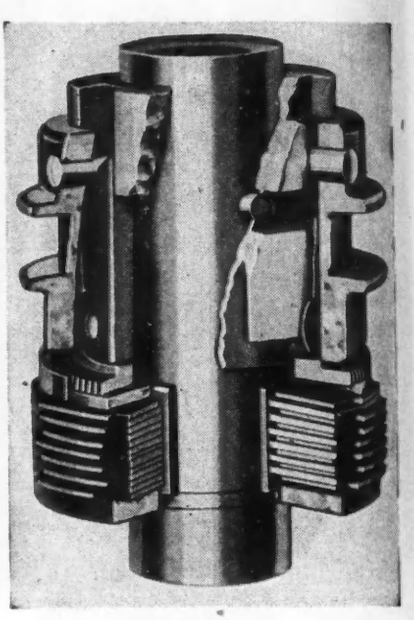
A new safety feature involves the welding of each rung into the side of the channel on the outside of the rail and internally expanding them on each side of the side plates.

Use Free Postcard For More Details.

P302. Multiple Disc Clutch

The Rockford Drilling Machine Division of Borg-Warner Corp.. Rockford, Ill., has announced the development of a new multiple disc clutch. It is used as main drive clutch, auxiliary clutch for controlling individual units, and in power take off mechanisms. The double type may be applied to obtain forward and reverse movements, or high and low speeds, or used as a clutch and brake. The Pullmore clutch is made for operation in oil or dry, in many capacities ranging from 1 to 90 h.p. at 500 r.p.m.

The mechanism consists of a series of discs carefully machined, a locking spring on a notched collar, operating levers, and a shifter spool. Operation is quick, and declutching is equally fast and positive. The pull-



ing power of the clutch is not affected by either centrifugal force or direction of rotation. Adjustment is easily accomplished when eventally needed. This type of clutch has been used with success in lathes, grinders,

Use Free Postcard For More Details.

END

(Please resume your reading on P. 62)

Trucks that pass in the night, heavily laden with war goods. Steel in bars and sheets, raw and machined parts, and all other items necessary to the needs of a fighting nation.

You have been at it nearly three years now, grabbing hurried meals at roadside lunch rooms, crowding every hour to maintain the truck operators' pledge of at least "one extra trip."

We know it has been tough on you and your equipment. It has taken a lot of careful maintenance to keep up schedules. We've had to hustle too, keeping up with Carburetor replacements and service parts.

But now that definite results are showing so plainly on every war front, we are all encouraged to see it through right to the last extra load.

MARVEL-SCHEBLER CARBURETER DIV.
BORG-WARNER CORP.
FLINT 2, MICHIGAN

MARVEL-SCHEBLER Carbureter

This big Fruehauf Trailer, drawn by a powerful F.W.D. tractor, is a "Bond Wagon" in every sense of the word. Operated by the Clintonville, Wisconsin, Transfer Line, it carries the inspiring invitation to protect the flag

LOW-COST HEAVY DUTY BRAKE SERVICE

Illustration shows Barrett B-35 Heavy Duty Brake Drum Lathe mounted on B-30 portable Adjustable Lathe Base in use at Springfield City Lines, Inc., Maintenance Department, Springfield, Ohio.

FASTER EASIER BETTER

WITH THE

BARRETT BRAKE DRUM LATHE

B-35 Brake Drum Lathe on stationary base.

Precision grinding, machining and honing the largest and heaviest bus and truck drums to super-smooth finish, with the tires on or off, is a simple and quick one-man job with a Barrett Brake Drum Lathe. Powerful, rugged, compact, the Barrett Lathe is furnished with either portable or stationary base for saving time and labor on any job, anywhere—in the field or in the shop.

Used and recommended by the largest bus and truck operators, car and truck manufacturers, leading service shops and used by the Army and Navy throughout the World, Barrett Lathes have proven their value in every case where low-cost, precision brake maintenance is an important problem.

Learn how the Barrett Brake Drum Lathe can pay for itself fast and give your shop a dividend in dollars and time. Write, or use the coupon, for complete information and a demonstration. No obligation!

BARRETT EQUIPMENT CO.

The World's Finest Brake Service Equipment

CASS AVENUE AT TWENTY-FIRST ST. • ST. LOUIS 6, MO.

BARRETT EQUIPMENT CO.
Cass Ave. at 21st St., St. Louis 6, Mo.

Please send catalog and complete information on Barrett Brake Service Equipment.

Company.....

Address.....

.....

.....

CCJ NEWSCAST

(CONTINUED FROM PAGE 78)

The Radiator Specialty Co. of Charlotte, N. C., has announced the following additions to its sales force: Frank P. Liston, Philadelphia, covering the District of Columbia, Maryland, New Jersey, and Eastern Pennsylvania. Harry B. Rapport, Buffalo, covering up-state New York and Western New York and Western Pennsylvania. E. W. Rainwater, Dallas, Texas, covering Texas, Oklahoma, and New Mexico.

Donald L. McGee has been appointed director of advertising for the Corronizing Division of Standard Steel Spring Co., Coraopolis, Pa.

Roy Schoonfield has been appointed Acting Manager of the Washington Branch of Gar Wood Industries, Inc. He succeeds A. E. Heath, who has been assigned to other duties.

S. A. Pennock has joined G. M. Basford Co., advertising agency, New York City, as an account executive.

Galen G. Cartwright has been named manager of the sales promotion department of The Goodyear Tire & Rubber Co.

E. S. Nickerson, assistant division manager and director of sales of the Fabrics Division, E. I. du Pont de Nemours & Co., has relinquished his sales responsibilities in order to devote his entire time to managerial duties. M. N. Nickowitz, previously Fairfield products sales manager, became director of sales, succeeding Mr. Nickerson. J. R. Owens, who has been serving as special assistant to the director of sales, was appointed Fairfield products sales manager.

J. L. Masterson, southwestern sales manager of the Finishes Division, E. I. du Pont de Nemours & Co., has been transferred to the main offices of the company at Wilmington, Del., and was succeeded here by J. W. Cleaveland, assistant sales manager. H. R. Lounsbury, eastern trade sales manager, Finishes Division, E. I. du Pont de Nemours & Co., has been appointed refinish sales manager at the main office. R. E. Plowman, special assistant to the sales manager, succeeded Mr. Lounsbury in the Philadelphia trade sales office. J. W. Nestor, industrial sales manager at the Chicago regional Finishes office, was transferred to Wilmington as assistant to the industrial sales manager. E. M. Flaherty was appointed manager of the Finishes Division of the Fabrics & Finishes Department was announced by E. I. du Pont de Nemours & Co. W. M. Zintl was appointed assistant manager.

J. T. Sullivan, who for the past year has been assistant branch manager, motor truck sales, International Harvester Co., has been moved to Portland, Ore., where he takes over as branch manager upon retirement of H. M. Mercer, November 1.

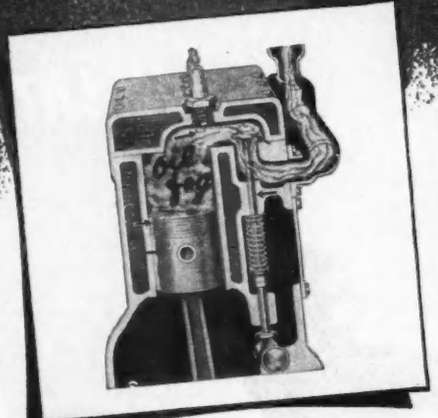
M. H. Roth, who has been assistant manager of the IHC Seattle branch is going to San Francisco and will replace Mr. Sullivan.

Ford branch personnel changes have been announced by J. R. Davis, director of sales and advertising, as follows:

Emerson Planck promoted to manager at the Richmond, Va., branch; Robert J. Burke promoted to man-

(TURN TO PAGE 176, PLEASE)

Transport Truckers:



Keep Valves, Guides, Upper Cylinder, Pistons, Rings

Oiled thru Carburetor

by treating your gasoline with

LUBRI-GAS

there's NOTHING else like it!

No mechanical system has ever been invented that assures constant, adequate lubrication of valves, guides, upper cylinder, pistons, rings. That is why sticky valves, burned and pitted valve seats, worn rings, and carbon and gum accumulations in upper cylinder are usually the first symptoms of motor trouble. Lubri-Gas Laboratories have developed an exclusive method of chemically processing 40 SAE lubricating oil, so that it enters the combustion chamber, through the carburetor, as an oil fog, and coats all upper cylinder parts with a film of clean oil. The results of this better lubrication are more power, more mileage per gallon, more pep, less wear and repair, freedom from carbon and gum and prevention of overheating and oil pumping. Now when it is so important to keep equipment in operation and out of the repair shop, LUBRI-GAS is indeed a God-send!

AMONG THE USERS OF LUBRI-GAS

International Harvester Co., Rock Island, Ill.; Rock Island Arsenal, Rock Island, Ill.; Stone & Webster Construction Co., Knoxville, Tenn.; Ossman & Norman, Madison, Wis.; State and County Highway divisions of: Texas, Montana, Kansas, Iowa, Illinois, Ohio, Indiana; Yellow Cab Co., Louisville, Ky.; Memphis Army Services Forces and various U. S. Army Engineers and other U. S. Army divisions, Memphis, Tenn.; Pennoyer Merchants Transfer Co., Chicago, Ill.; Keeshin Motor Express Co., Chicago, Ill.

TRADEMARK

LUBRI-GAS 221 No. LaSalle St. Chicago 1, Ill.

Cleans and Lubricates as It Powers the Motor

"The Pump is the Heart of the Hoist"

...and this Heil-designed pump is one big reason for Heil dependability

The product of years of engineering research and manufacturing experience, this Heil hydraulic pump is proving itself again on all the battlefronts of the world — as it had already proved itself on commercial truck equipment.

You can rely on Heil Hydraulic Dump Units

(equipped with the troublefree Heil pump)

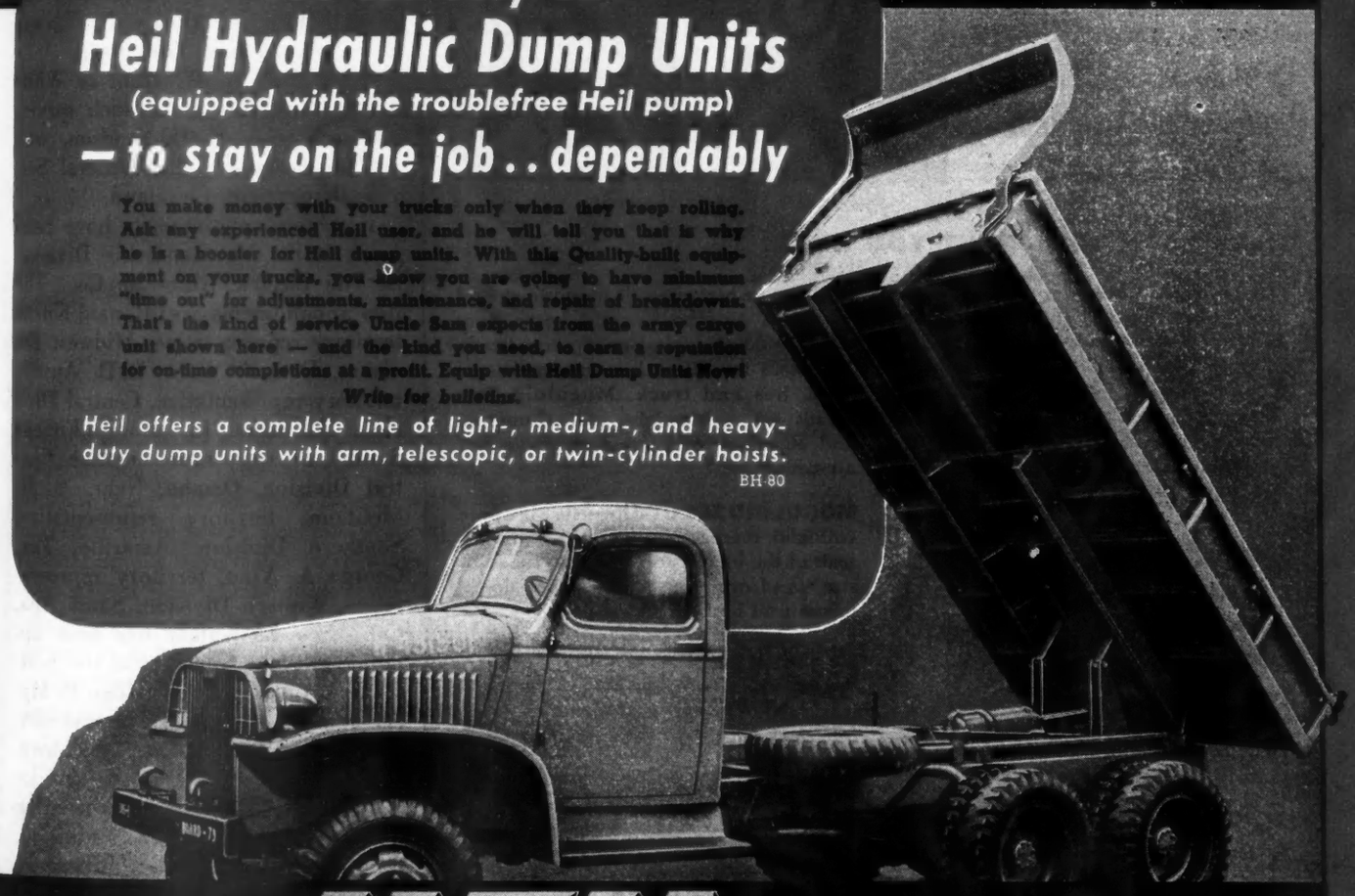
— to stay on the job.. dependably

You make money with your trucks only when they keep rolling. Ask any experienced Heil user, and he will tell you that is why he is a booster for Heil dump units. With this Quality-built equipment on your trucks, you know you are going to have minimum "time out" for adjustments, maintenance, and repair of breakdowns. That's the kind of service Uncle Sam expects from the army cargo unit shown here — and the kind you need, to earn a reputation for on-time completions at a profit. Equip with Heil Dump Units Now!

Write for bulletins.

Heil offers a complete line of light-, medium-, and heavy-duty dump units with arm, telescopic, or twin-cylinder hoists.

BH-80



THE HEIL CO.

ARMY E NAVY

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

CCJ NEWSCAST

(CONTINUED FROM PAGE 174)

ager at the Atlanta, Ga., branch; Harold K. Turner promoted to manager at the Cincinnati, Ohio, branch; A. F. Bauerbach promoted from assistant sales manager of the Cincinnati branch to assistant branch manager; Mark L. Conrad promoted to assistant Dearborn, Mich., branch manager, working with A. G. Coulton, whose appointment as assistant branch manager was made some time ago.

C. A. Burgdorf, who has been associated with the Ford Motor Co. for 21 years, has been appointed manager of the Charlotte, N. C., branch. R. F. Leonard, formerly manager of the Cincinnati branch, has been appointed manager of the Buffalo branch. Clem Davis, sales manager of the Dearborn branch, has been appointed assistant manager of the Louisville, Ky., branch.

H. R. (Paul) Merriken, formerly with the Standard Oil Co. of Pennsylvania, has now become associated with Ralph E. McConnell, automotive equipment dealer in Philadelphia.

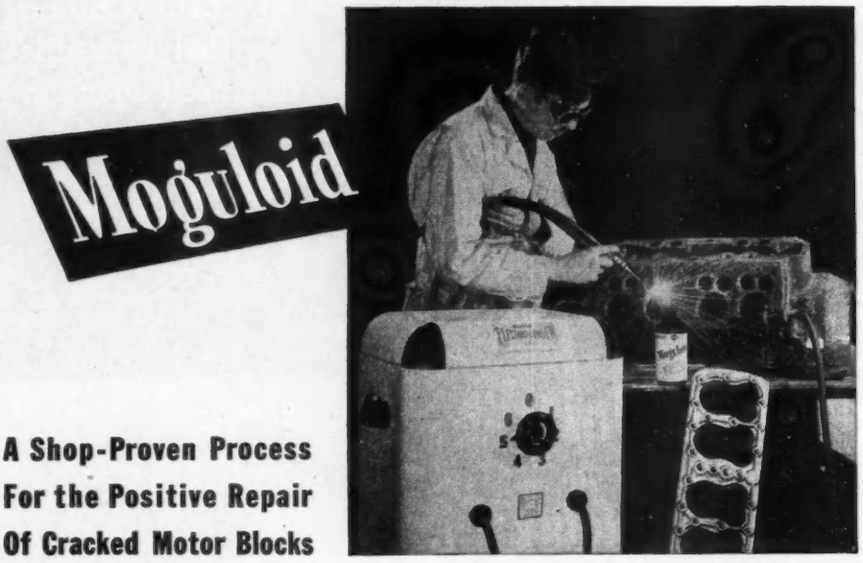
The Weatherhead Co., Cleveland, announced the appointment of L. J. Henderson as assistant general sales manager, and Gene P. Robers as sales promotion manager. Announcement also was made of the relocation of Weatherhead's West Coast sales office from 6039 Wilshire Blvd., Los Angeles, to 1736 Standard Ave., Glendale, where a branch plant is located. Otto Abrams, formerly sales engineer with the Cleveland division, has been transferred to Glendale to assist E. Van Vechten, West Coast sales manager, in the direction of the relocated and expanded sales branch.

Gaybex Corp. of Nutley, N. J., announced the appointments of two sales representatives. Clarence Vincent of Camden, N. J., will handle the company's sales in the Philadelphia metropolitan area, including Trenton, N. J., and Wilmington, Del. Myer Bressen of Albany, N. Y., will cover eastern New York state.

Succeeding A. W. Hunt as White Motor Co.'s Chicago branch service manager is A. S. Edmundson, who was formerly with the General Service Department, Cleveland.

Five new appointments have been made in the Merchandising Division of The Electric Auto-Lite Co. The new appointments are: Ronald Kurtz, territory representative, Midwest Division, Detroit, Mich. I. D. Austin, territory representative, Central Division, Winnetka, Ill. Harry Eugene Smiley, territory representative, Central Division, Omaha, Nebr. S. H. McGlaun, territory representative, Southern Division, Amarillo, Tex. George A. Viau, territory representative, Western Division, Santa Ana, Cal. Leo E. Walker has been appointed district manager of the Seattle West Coast territory. John P. Mycue was appointed district representative in the Buffalo, N. Y., territory. L. C. Gleckler, who formerly was located in Buffalo, is now representing the company in Utica. William J. Dick has been appointed a territory representative of merchandising division in the western division. He will be headquartered in Los Angeles, Cal.

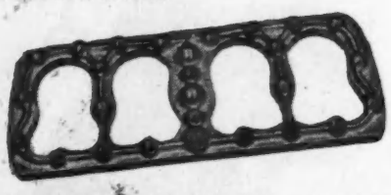
(TURN TO PAGE 178, PLEASE)



A Shop-Proven Process For the Positive Repair Of Cracked Motor Blocks

HERE'S THE EQUIPMENT YOU NEED

There is absolutely no guesswork in motor block repair with this time-saving, proven, new Moguloid process which basically employs the Mogul Electric Bonder—an air-cooled unit for electric bonding the crack. It is fast and easy to use. Nickel rod is used for cast iron blocks and aluminum rod for aluminum heads and blocks.



MOGULOID TEST HEAD — With the electric bonding technique or any mechanical method of block repair it is recommended that a Moguloid Test Head be used to test for possible pin hole leaks. These heads are also invaluable for testing seepage, after sleeves have been installed or when water is found in the oil reservoir. No shop should be without these fool-proof, time-saving test heads. Available for all makes and models of auto, bus and truck. Moguloid Test Heads are lightweight, cast aluminum and equipped with pressure gauge and air connector.

MOGULOID SOLUTION—Here is a pure colloidal that is excellent for sealing a leak in the block, stop a leak in the radiator, head or water pump. Shops doing mechanical block repair will find Moguloid the solution for closing pinhole leaks in the repair. Every bus and truck should carry a bottle for emergency repairs on the road.

Write for New Moguloid Bulletin No. 22 on Cracked block repair.

MOGULOID COMPANY OF AMERICA
DIVISION OF
Metallizing Company Of America
Dept. C-12, 1503 W. Van Buren Street, Chicago 7, Illinois

YOU CAN'T BEAT THIS COMBINATION

Wolf's Head Heavy Duty Oil is an expertly blended 100% Pennsylvania oil that combines all of the five characteristics which a heavy duty oil must have to withstand heavy duty operation under severe war-time overload conditions. Other lubricating oils have one or more of these characteristics but Wolf's Head Heavy Duty excels in the expert development of all five. You can't beat this combination for heavy duty service. It is the product of sixty years' refining experience.

Fleet operators the country over choose Wolf's Head Heavy Duty to cut operating costs because it saves engine wear.

Proof of Wolf's Head Heavy Duty performance is contained in our free booklet, "Heavy Duty Maintenance." Write for your copy today to Wolf's Head Oil Refining Co., Inc., Oil City, Pa., or New York 10, N. Y.

WOLF'S HEAD LABORATORY CONTROL SERVICE

Gives fleet operators specific recommendations for their units, based on analysis of crankcase oil. Helps to establish correct drain periods, conserve engine life, reduce lay-ups and frequently reveals unsuspected engine trouble. Free and without obligation.

WOLF'S HEAD

MOTOR OIL AND LUBES

100% Pennsylvania P. G. C. O. A. Permit No. 6

CCJ NEWSCAST

(CONTINUED FROM PAGE 176)

E. E. (Earle) Duffy has joined the staff of the Automotive Safety Foundation, Washington, D. C.

Emerson J. Poag has joined Ross Roy, Inc., Detroit advertising agency, as vice-president. He recently resigned as assistant general sales manager in charge of advertising at Dodge Division, Chrysler Corp.

J. E. Lennon has been appointed district manager of the Middle Atlantic territory of the Kellogg Division of American Brake Shoe Co. Previously he had charge of the Ohio territory with headquarters in Columbus.

Dow W. Carpenter has been appointed district service engineer of the Marshall-Eclipse brake lining division of Bendix Aviation Corp. in the Pacific Coast territory with headquarters in Los Angeles.

D. E. Stenson has been appointed eastern district sales manager of the Lynch Mfg. Corp., Defiance, Ohio.

Thomas N. Boate, chief of the traffic division of the Pennsylvania State Police and a national authority on traffic regulations and control, has been appointed director of the special service division of the National Conservation Bureau, accident prevention division of the Association of Casualty and Surety Executives, succeeding John J. Hall in that position.

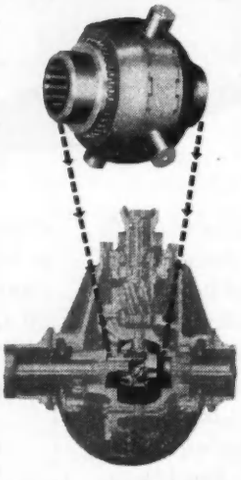
lies the Secret that Makes Wheels *Pull* instead of SPIN

The THORNTON *Automatic-Locking* DIFFERENTIAL

—greatest advance in differential design—is now available to truck owners who must keep their vehicles moving . . . pulling on through extremely tough surface conditions the year 'round.

This war-tested *Locking* differential stops one wheel spin which normally stalls a vehicle in snow . . . sand . . . soft fields . . . mud . . . muck, etc., because both wheels *must* rotate when power is applied.

Allows full maneuverability of vehicle. Installed easily on trucks for pull, safety and where time or delivery schedules must be maintained. Use coupon to obtain full facts *free*.



(Available with Limitation Order Certificate L-158)

MAIL THIS COUPON

THORNTON TANDEM CO.
8775-H GRINNELL AVENUE • Plaza 9700
DETROIT 13, MICHIGAN

Make Big Trucks Out of Little Ones with the THORNTON *Four-Rear-Wheel* DRIVE

In U.S.: Sold by TRUCKSTELL DISTRIBUTORS
In Canada: H. V. WELLES, LTD., Windsor, Ont.
In Mexico, Caribbean Area:
THOMAS M. NEVIN y CIA S. A., Mexico, D. F.

THORTON TANDEM CO.
8775-H Grinnell Ave.
Detroit 13, Michigan

Please send me data on your *Automatic-Locking* Differential.

Name.....

Address.....

City..... *State*.....

Make and Model..... *Year*.....

Arthur P. Emmert, left, newly-elected president Warner Gear Division, Borg-Warner, confers with E. S. Russey, center, vice president and general manager, and J. O. Moore, works manager. Emmert succeeds C. S. Davis, Borg-Warner Corporation president who has retired from his division post to devote his entire time to affairs of the parent organization.

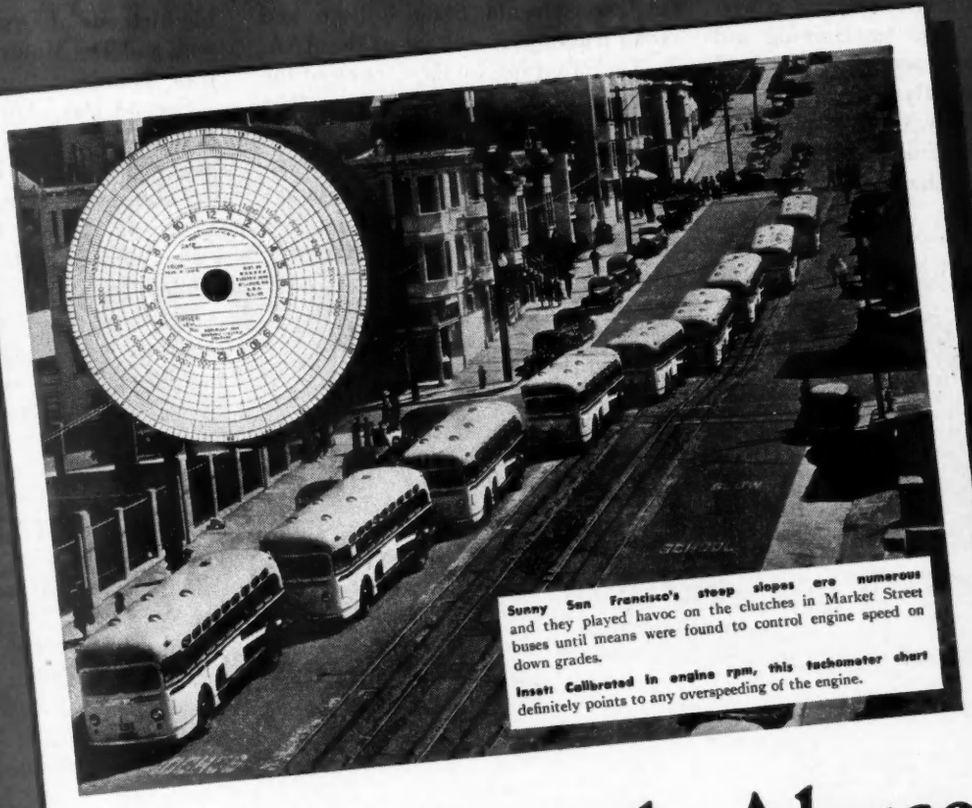
William E. Simons has been appointed sales manager of the Body and Hoist Division of The Heil Co., Milwaukee

Ralph E. Lockhart, formerly central division sales manager for Opaco, has been appointed manager of the Lubricating Equipment Division of The Aro Equipment Corp., in the Chicago territory

Ralph E. Wilkinson, former representative for Independent Pneumatic Tool Co., has been appointed manager of the Lubricating Equipment Division for the Wisconsin territory

(TURN TO PAGE 180, PLEASE)

TACHOGRAPH (Recording Speedometer)
records and discloses important operating information



Sunny San Francisco's steep slopes are numerous and they played havoc on the clutches in Market Street buses until means were found to control engine speed on down grades.

Inset: Calibrated in engine rpm, this tachometer chart definitely points to any overspeeding of the engine.

Curing Clutch Abuse

How Market Street Railway found the solution to a troublesome clutch problem

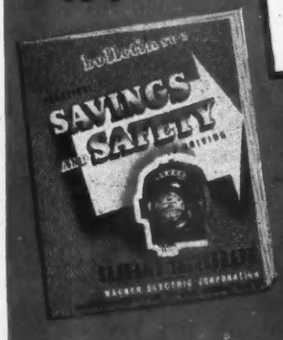
AN AMAZINGLY SUCCESSFUL METHOD of avoiding clutch trouble on hill operations has been developed by the Motor Coach Division of the Market St. Railway, San Francisco. Shortly before the war, this company had substituted motor buses for cable cars on some of its steepest hillside lines.

The change probably would not have been made if current equipment problems could have been anticipated. But since the step was taken, the company had to make the best of it, had to find ways and means of making coaches deliver maximum productive life on difficult terrain. Surprisingly, no undue amount of engine trouble developed but the problem of avoiding clutch wear became quite serious. Descending the steep hills, some of them 19½ percent grades, was found to be the principal contributing factor to early clutch mortality.

Experiments showed that the whole trick in avoiding this difficulty was to get operators to start down in low and to hold speed to a maximum of ten miles per hour. That proved quite a chore with green drivers. The first attempt at enforcement of this rule was made by putting signal lights on backs and fronts of the coaches—lights that would flash on if the engine was turning up more than 2,000 rpm. The idea was to have supervisors make constant checks. But when supervisory personnel became extremely scarce, this plan failed.

Now, the coaches have been equipped with tachometers for which the charts are designed to indicate engine revolutions rather than miles per hour. The instruments are of Sangamo design, distributed by the Wagner Electric Corp., St. Louis, cost the company about $75 each installed — and they've paid for themselves many times in prevention of clutch destruction. The minute a chart pops up showing that a given driver has taken a hill with his engine "reved" up to more than 2,000 rpm., he's called on the carpet. The evidence is positive. There's no argument about it. The men are shown that under present conditions no deviation from the rule on this point can be tolerated. As a result, clutch wear on the steepest grades is not greater now than on level runs. An accompanying photo shows one of San Francisco's many steep hills. The coaches lined up in this photo are awaiting dismissal school.

Write for Bulletin SU-3



The article reproduced above appeared on Page 54 of the June, 1944 issue of Bus Transportation, and is reprinted with permission of the publisher . . . Tachographs, of the R.P.M. and of the M.P.H. types are manufactured by the Sangamo Electric Company, and are distributed exclusively by the Wagner Electric Corporation . . . During the war Tachograph production has been curtailed —BUT Tachographs are *worth waiting for.*

AUTOMOTIVE PARTS DIVISION

Wagner Electric Corporation

6470 Plymouth Avenue, St. Louis 14, Mo., U.S.A.

CCJ NEWSCAST

(CONTINUED FROM PAGE 178)

Fleet Personnel Training Course to Be Repeated

Under the sponsorship of the Detroit Industrial Safety Council, a five-day course in selecting, training and maintaining fleet personnel was held in Detroit recently. Open to fleet owners, fleet superintendents, assistant superintendents, fleet engineers, chief mechanics, dispatchers, driver instructors, transportation officials, and others interested in safe driving and conservation of vehicles, the course was under the direction of Amos E. Neyhart, administrative head of the Institute of Public Safety at Pennsylvania State College and road training consultant of the AAA.

The program, by days, covered the following subjects: First day—Past and Present Status of Safety Programs; The Fleet Owner's Part in Improvement of Traffic Conditions; Need and Justification of a Training Program for Drivers; Objectives of a Driver Training Program; The Teacher in a Driver Training Program; Plan and Standards of Administration and Instruction; Possible Methods of Organization of Content, and The Motor Vehicle in America's Transportation Program.

Second Day—Qualifications of the Motor Vehicle Driver, including a. psychological tests, b. traffic and driving knowledge tests, c. field exercises in closed area, d. field exercises in traffic, and e. appraisal of driver attitude.

Third day—Motor Vehicle Construction and Operation; Rules of the Road and Advanced Driving Practices; The Dricer's Responsibility for Maintenance and Conservation of Equipment; Fire Prevention and Fire Catastrophies; Responsibility for Accidents; The Driver's Responsibilities to the Company; and Cooperation Between Driver and Mechanic and Driver and Customer.

Fourth day—Methods of Creating and Holding Driver Interest; Methods of Using Educational Materials and Teaching Aids; Methods of Conducting Instruction, Methods of Scheduling; Plans for Field Work, and Liability, Insurance and Costs.

Fifth day—Records and Reports; Examples of Good Programs Now in Operation, Including Training of Women Drivers; Building Better Relations Between Management, Driver and Public; and Application of the Program to Individual Fleets.

According to C. E. Wormuth, manager of the Council, the course has proved so popular that it will be given again shortly after the first of next year.

Flat Rate Brake Lining Chart

L. J. Miley Co., Inc., Chicago, manufacturer of brake lining materials, clutch facings, fan belts, etc., announced the issuance of a new Flat Rate Brake Lining Chart in handy four page form. It lists practically every car on the road today, as well as Ford and Chevrolet Trucks, shows numbered sets, or sizes of roll lining, and recommended grades to be used.

This chart is available free on request through Miley jobbers or sales representatives.

(TURN TO PAGE 132, PLEASE)

ROAD PROVED
by Men Who Use Them!

DENVER CHICAGO TRUCKING COMPANY, INC.
Trans-Continental Freight Service
2301 BLAKE STREET
DENVER 2, COLORADO
September 12, 1944

American Safety Tank Company
2814 Mercier
Kansas City 8, Missouri

Gentlemen:

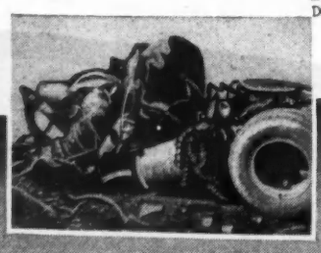
It has now been several years since we began equipping our road trucks with American Safety Tanks, and since that time they have shown themselves continuously to be superior in construction and in the prevention of fire hazard in accidents.

During these years, we have had a number of serious accidents resulting in heavy damage to our equipment, but in not one single instance in which the unit involved was equipped with your Safety Tanks, was there a fire resulting from leakage of gasoline from the tanks. For example:

In March, 1943, one of our units was struck by a freight train near Clinton, Iowa. The train struck our truck directly over the Safety Tank, breaking the tractor and trailer, and carrying both one on each side of the locomotive, for several hundred feet. Thanks to the superior strength of your Safety Tanks, this unit did not catch fire, and the driver was saved from the almost certain death which would have resulted had the gasoline tank not withstood the heavy impact of the locomotive.

In view of this exceptional evidence of the qualities of your product, we can heartily recommend these Safety Tanks to every fleet operator, as the most economical protection obtainable against gasoline fire hazard.

Sincerely yours,
Laurence Cohen
Laurence Cohen, President
Denver Chicago Trucking Co., Inc.



American Safety Tank Co.
UNDERWRITERS LABORATORIES, INC., A. U. 1302
KANSAS CITY, MISSOURI, U. S. A.

ONLY THE RIGHT PLUGS CAN "TAKE IT"

If spark plugs misfire when the going gets tough—if they wear out too fast or foul too rapidly—it is quite certain that the plugs have the wrong Heat Range for your engine.

Spark plug troubles are the enemies of low operating costs. They waste time, upset schedules, and cause loss of power and fuel. Yet, they are simply and easily remedied.

You begin by choosing quality plugs of the correct Heat Range for your engine, which AC makes it easy for you to do. And you see that they are cleaned and regapped every 3,000-5,000 miles, replacing worn plugs with new AC's.

Only the right plugs can stand severe service—and AC makes the right plugs for your engine.

AC SPARK PLUGS

TO SHORTEN THE WAR, BUY EXTRA WAR BONDS NOW

• SEND FOR AC SHOP MANUALS

Field Service Dept., AC Spark Plug Div., G. M. Corp.
910 Union Industrial Building, Flint, 3, Michigan
Gentlemen: Please send me at once, no charge, the AC Shop Manuals checked: CCJ-12

- ☐ HOW TO SERVICE SPARK PLUGS
- ☐ How to Service Spark Plug Cleaner
- ☐ How to Service Ammeters and other Instruments
- ☐ How to Service Oil Filters
- ☐ How to Service Fuel Pumps
- ☐ How to Service Air Cleaners
- ☐ How to Service Speedometers

NAME_____
FIRM_____
STREET ADDRESS_____ STATE_____
CITY_____

CCJ NEWSCAST

(CONTINUED FROM PAGE 180)

Trailer Makers Hear What Operators Want

Contract termination procedures and industry reconversion were discussed at an emergency meeting of the Truck-Trailer Manufacturers Association in Chicago, on Nov. 10. E. J. Lucas, president of the association and sales manager of the Kingham Trailer Co., presided.

Harry F. Chaddick, president of the American Transportation Co., of Chicago, and chairman of the Postwar Planning Committee, Common Carrier Division, American Trucking Associations, in a luncheon address told the manufacturers of the wartime experiences of the transportation industry. Mr. Chaddick spoke in detail of the improvements in trailers which the operators wished the industry to make. He likewise stressed the need for a new conception of the financing of trailers. It was Mr. Chaddick's opinion that the motor carrier industry has learned from its wartime experience that it is necessary to operate larger and heavier equipment in order to furnish the required service at prewar rates and yet pay prevailing labor, material and equipment costs. He stated further that unless temporary legislative relief which had been granted the industry as a wartime measure was made permanent, it would be impossible for the motor carrier industry to survive.

Col. C. G. Pratt, Deputy Director of the Contract Termination and Property Disposal Division, Headquarters, A.S.F., spoke on the Army's plans for informing industry of proposed cutbacks on X-Day. Col. Pratt also strongly recommended to the trailer manufacturers that they take full advantage of the Army's pretermination procedure. John H. Middlekamp, director of the Automotive Division, WPB, said that the War Production Board plans to discontinue practically all production controls on V-E Day but that they will not relax these controls one iota until V-E Day. Col. Middlekamp explained that expected Army cutbacks on V-E Day would free sufficient manpower, factory capacity, and materials to provide for civilian manufacture in addition to all military requirements for the Japanese war. He stated further that there would be only one priority rating and that one would apply to military requirements. This would insure that these items were produced on schedule because civilian production of trucks and trailers, while not controlled, would be prevented from interfering with military requirements because the latter would have the only priority rating.

There were 64 trailer manufacturers and suppliers present.

Republic Acquires Light Steel License Rights

Plans for a large expansion in its production and sale of high-strength low-alloy steels to meet anticipated post-war demands for light-weight equipment in the transportation field were announced by Republic Steel Corp.

(TURN TO PAGE 184, PLEASE)

NO JOB FOR A STREET-CLEANER

Give SOL-SPEEDI-DRI a shot at that garage-floor

A "white-wing" is all right for following parades; but SOL-SPEEDI-DRI is the thing to turn loose on that oily, greasy garage-floor. Each tiny, white granule of SOL-SPEEDI-DRI acts like a sponge on oil and grease, even pulling old deposits out of wood, concrete, and composition floors.

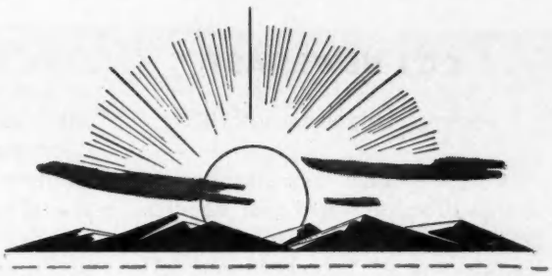
Great stuff, SOL-SPEEDI-DRI, with many uses. Tumble your tools into a pan of it and watch the grease disappear from them. See how slipping-accidents stop as SOL-SPEEDI-DRI gives floors an anti-skid surface. Fire-hazards disappear, too. Do away with expensive machines, dangerous caustics, back-breaking labor. Spread SOL-SPEEDI-DRI on those oily, messy floors and when you sweep it up they'll look like new. See your jobber or write for literature and a generous FREE SAMPLE.

SUPPLIERS: East — Refiners Lubricating Co., New York 1, New York.
Midwest & South — Waverly Petroleum Products Co., Philadelphia 6, Pa.
West Coast — Waverly Petroleum Products Co., Russ Bldg., San Francisco 4, Calif.

SOL·SPEEDI·DRI
OIL AND GREASE ABSORBENT

"THINK FIRST— STOP ACCIDENTS"

A Great Electronic Day...



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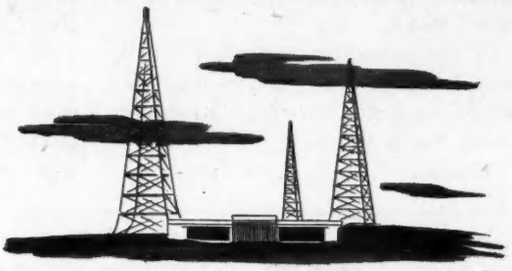

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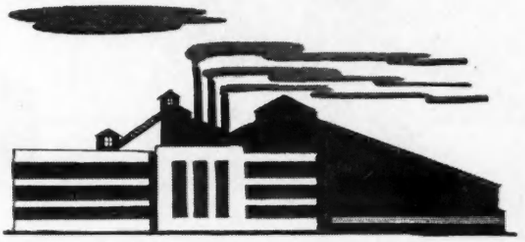

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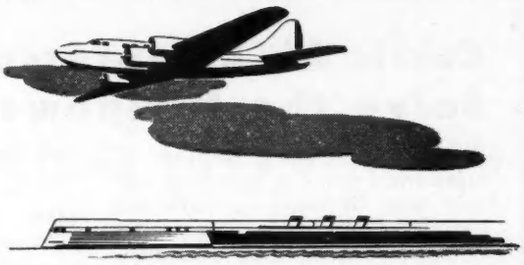
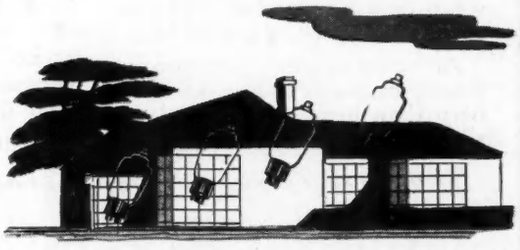


for Home



Raytheon is proud of its contributions in the development of new electronic tubes and complete electronic equipment for the Armed Forces. Proud of the trust the military has placed in our designs, engineering and manufacturing abilities.

When war ends, Raytheon's wartime experience, research facilities, engineering and the production skills of over 16,000 men and women will be turned to peacetime electronics. Then you'll hear about and see Raytheon Electronic Equipment that will provide untold benefits in all phases of electronics. In the coming Age of Electronics . . . LOOK to Raytheon for complete electronic equipment and electronic tubes.

Tune in the Raytheon radio program: "MEET YOUR NAVY," every Saturday night on the entire Blue Network. Consult your local newspaper for time and station.

RAYTHEON
MANUFACTURING COMPANY
Newton and Waltham, Massachusetts

Devoted to research and manufacture of complete electronic equipment; receiving, transmitting and hearing aid tubes; transformers; and voltage stabilizers.

CCJ NEWSCAST

(CONTINUED FROM PAGE 182)

N. J. Clarke, vice-president in charge of sales, stated that Republic has acquired license rights for the manufacture of "Cor-Ten" and "Aldecor" steels.

At the same time, Republic will continue to produce and market its own trademarked product, "Republic Double Strength Steel."

"Cor-Ten," widely used for many years, is a patented steel produced by Carnegie-Illinois Steel Corp., and other subsidiaries of U. S. Steel Corp. "Aldecor," a comparatively recent product among the high-strength, low-alloy steels, was the result of research by Alloys Development Corp., of Pittsburgh, and was developed by Republic Steel Corp.

Mr. Clarke said, "The trend which began several years before the war toward the use of lighter but stronger steels by the transportation industry will accelerate sharply as soon as wartime restrictions on steel production are lifted."

Survey Shows 6-Volt System Most Desirable

The postwar passenger car will be equipped with six-volt electrical systems as used in prewar models, according Philip J. Kent, of the engineering division of Chrysler Corp., who addressed the annual meeting of the Association of American Battery Manufacturers in Chicago recently.

After investigating what advantages the 12- and and 24-volt systems used on war vehicles might have for passenger cars and commercial trucks, Mr. Kent said, he is convinced that there are no electrical developments contemplated for the immediate postwar cars or trucks that would make it necessary or desirable to go to a higher voltage system, which is inherently more costly. The six-volt system will be adequate until such time as automobile lights and appliances, such as radios and heater or air-conditioning units, demand more power through manufacturing changes or public desire.

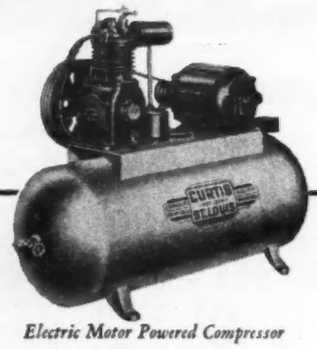
Findings of Mr. Kent's survey are:

1. That 12- and 24-volt electrical systems increase hazards from short circuits and interference with radio reception. To overcome these conditions, changes would have to be made in materials and design at considerably greater cost.

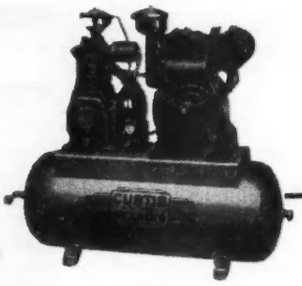
2. That the six-volt starting system is adequate for all car engines and probably all gasoline-type truck motors. Starting motors using 12- or

(TURN TO PAGE 186, PLEASE)

Three times winner in two years of the coveted Army-Navy Award for meritorious service in the production of heavy-duty trucks for our armed forces, officials and labor representatives of the Federal Motor Truck Co. gathered atop the roof of the company's main office building to unfurl the new two-star flag to the winds



Electric Motor Powered Compressor



Gasoline Engine Powered Compressor

Curtis Air Compressors Help You Solve the Manpower Shortage!

With the increasing shortage of manpower, you can save time and save labor by using air tools and equipment operated by a Curtis Air Compressor. And today, you can get a high priority for Curtis Compressors to furnish air for the many labor-saving tools used in service work.

Air power enables you to turn out more jobs per day, even with less help than formerly required for manual operations—use it for the tools and jobs listed on this page.

Curtis Air Compressors are designed to deliver a completely adequate supply of air and to give you most efficient performance, longer life at lowest expense for maintenance. Keep up with the demand for service and solve your manpower problem with Curtis airpower. Write today for complete information on prices and priority ratings.

Use the air from your Curtis Compressor for the following tools and jobs:

Grease guns	Spark plug testers	Door opening devices
Riveting hammers	Engine cleaning guns	Air drills
Tire spreaders	Car washers	For drying parts
Fender hammers	Spring sprayers	Paint sprayers
Brazing forges	Pneumatic hoists	Air jacks
Tire regroovers	For blowing out carbon	And many other labor-saving tools and operations
Pneumatic wrenches	For cleaning parts	

CURTIS PNEUMATIC MACHINERY DIVISION *of Curtis Manufacturing Company*
1970 Kienlen Avenue, St. Louis 20, Missouri

CURTIS St. Louis • New York • Chicago • San Francisco • Portland

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1970 Kienlen Avenue, St. Louis 20, Missouri

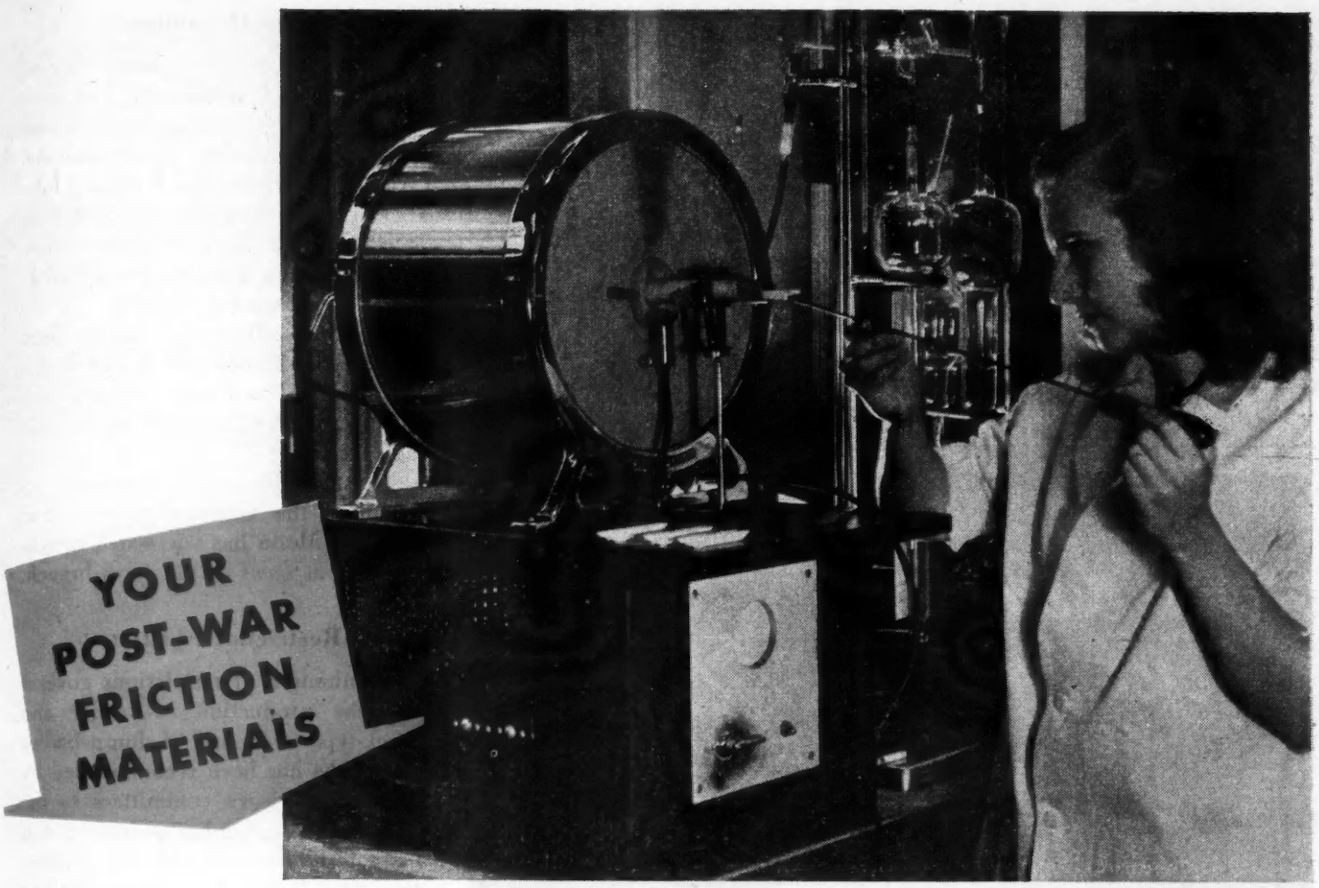
Please send me booklet, "How Air Is Being Used in Your Industry."

Name.....

Firm.....

Street.....

City.....Zone.....State.....



...are being perfected NOW!

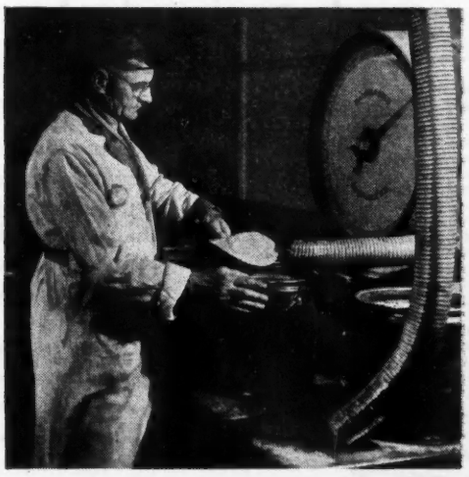
MEASURING the exact amount of carbon in each Velvetouch formula, as shown in the photograph above, is only one of many controls by which we assure uniformity of quality. Our laboratories are engaged in never-ending research to improve still further the friction qualities of Velvetouch *all-metal* clutch facings and brake linings... so that your heavy-duty buses and trucks will start and stop more smoothly, more dependably.

THE S. K. WELLMAN COMPANY
1374 EAST 51st STREET • • CLEVELAND 3, OHIO

Velvetouch is *all metal* —a combination of powdered metals, compressed, sintered and welded to a solid steel backing.

For Brake and Clutch ... Use Velvetouch

The "INSIDE STORY" of POWDER METALLURGY



CHAPTER 1. Powdered metals—iron, lead, tin, etc.—first are carefully blended in the right proportions for each type of brake and clutch. After thorough mixing, they are ready for the molding and sintering operations.

CCJ NEWSCAST

(CONTINUED FROM PAGE 184)

24-volts involve a more costly armature construction or the use of reduction gears.

3. That higher voltage systems would require larger and more expensive batteries, which would result in probable increases in cost of installation and maintenance as well as greater initial costs.

4. That voltage regulators for 24-volt systems would require better contacts and that past experience with them has shown an increased amount of service trouble.

5. That ignition coils for 12- and 24-volt systems would be more expensive and require the use of resistors.

6. That lamps with voltage above six require longer and finer filaments which are likely to burn out or break, increasing replacement costs.

7. That an increase in voltage would not give any better radio reception.

OPA Merges Divisions

The OPA has announced its consolidation of fuel rationing and automotive supply rationing under a new division to be known as the Fuel and Automotive Rationing Division. John G. Neukom, formerly in charge of fuel rationing, has been named director of the new division, with Fred L. Parker as associate director.

Richard C. Harrison, who has been in charge of automotive supply rationing, will continue with the new OPA division as a consultant on mileage rationing.

Quentin Regestein continues as chief of the Gasoline branch, and John C. Mann has succeeded Sparks Bonnett as chief of the Tires branch.

Want Restrictions Lifted

Elimination of restrictions governing the production of trailer and truck-type tanks and of dump bodies for trucks has been recommended by industry advisory committees to the WPB. The latter has pointed out it cannot authorize increases in production until favorable recommendations for such increases are made by area War Manpower Commission and area Production Urgency Committee, offices.

(TURN TO PAGE 264, PLEASE)

... but who checks your SPRINGS?

Call nearest Rowland Distributor. He's supplied by these branches:
ATLANTA 3, Ga., William and Harvey Rowland, Inc., 449 Marietta St., N. W.
BIRMINGHAM 3, Ala., Birmingham Spring Service, Inc., 2017 Avenue B, South
CHICAGO 16, Ill., William and Harvey Rowland, Inc., 2732 Indiana Avenue
JACKSONVILLE 4, Fla., Jacksonville Spring & Alignment Co., 137 Jefferson Street
PHILADELPHIA 30, Pa., William and Harvey Rowland, Inc., 1414 Fairmount Ave.
PITTSBURGH 13, Pa., Point Spring Co., 419 Melwood St.

If you plan to stop spring trouble before it starts put your vehicles on a regular program of spring inspection. Be sure to have this work done by spring specialists—by a Rowland Spring Distributor. Knowing springs—how to make them deliver a full lifetime of service, what to look for that might cause premature failure and how to prevent serious trouble—is the job of Rowland Spring Distributors. And they're good at it. For SPRINGS and service, mufflers, universal joints, wheel suspension parts call any one of nearly a thousand Rowland Distributors.

CERTIFIED ALLOY STEEL ROWLAND SPRINGS Est. 1795

WM. and HARVEY ROWLAND INC.
FRANKFORD, PHILADELPHIA 24, PENNA.
SPRINGS: MUFFLERS • WHEEL SUSPENSION PARTS • UNIVERSAL JOINTS

150th ANNIVERSARY OF AMERICA'S OLDEST LEAF SPRING MANUFACTURER

GRIPES

(CONTINUED FROM PAGE 50)

type flanges in this system, most of this misery would be eliminated.

Flanges on both ends of the muffler, for instance, would make this item an easy one to repair or install.

Seems when they installed the exhaust pipes and muffler, they put them into every close place they could find, never giving it a thought that in the not too distant future all of these would have to be replaced due to the poor grade of tin used in their make-up.

The chief engineer's conversation to his men must go something like this:

"John, you have put the exhaust pipes and mufflers in almost impossible places. You have installed bolts plenty long so they can rust into a permanent joint. Now, when we put

(TURN TO PAGE 188, PLEASE)

THE hum of a heavy truck on a highway—the purr of a bus and the whir of a car—are behind the deep bass roar of American industrial might. Factory wheels spin only because materials and manpower reach the job safely, and on time. Transportation is vital, calling for utmost reliability of equipment.

Packard cable carries the current in a majority of these vehicles. Packard cable has been the original equipment choice on cars, trucks and buses ever since the beginning of the automotive industry. Leading garages, car dealers and service stations recommend Packard cable as the best replacement choice. Packard is favored because its reputation has been built by finest performance under severest operating conditions.

More aviation cable, for instance, is made by Packard than by any other manufacturer. Fighter and bomber planes are sparked by current that travels through Packard cable. Tanks, landing craft, gun-control apparatus, Army "ducks" and half-tracks, radio equipment and many other war weapons have Packard cable. . . . You're *right* in choosing Packard cable when you replace spark plug wires, battery cables and lighting cable. Packard is the leading choice in keeping essential transportation rolling.

GOOD WIRING MEANS LONG-LASTING ELECTRICAL EQUIPMENT

PACKARD CERTIFIED RE-WIRING SERVICE

Based on proper checking and replacement procedure, using Packard cable.

Ask your Packard jobber about it.

We Can't Let Up for a Moment

Keep Buying Bonds

Packard

REG. U.S. PAT. OFF.

PACKARD ELECTRIC DIVISION
GENERAL MOTORS CORPORATION
WARREN, OHIO

FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING

GRIPES

(CONTINUED FROM PAGE 186)

the body on, we will have something that should bring out the foulest language known to man when the mechanic tries to change these parts.

"Joe, I see you have done a swell job on the manifold. I see that since the body has been put as far to front as possible, it will be necessary to make a special long shank drill to go through the body to drill out a broken stud or bolt in the motor. I like this heat riser you have incorporated into the manifold. No doubt it will be stuck all the time, but I believe it will work until the owner gets the machine to his garage.

"Now, I believe we had better raise this front fender a little, because I can still see a tiny bit of the manifold. That's it. Now it is completely out of sight."

At this point the time study man (bless him) comes in. He reports that he has studied all angles of this operation, and the mechanics should be able to do all the repairs to this exhaust system in 58 minutes and 12 seconds.

Why do they do the mechanics like this?

Thanks for THE GRIPE DEPARTMENT, I feel better since this is off my chest.

W. M. HEIL,
Gulf Refining Company,
Louisville, Ky.

Inaccessibility

$10

THE GRIPE DEPARTMENT,
DEAR SIRS:

One more "Gripe": First, may I eulogize the greasy mechanic. He is compelled to wear a double set of clothing, even though the weather is very hot. Then a vehicle has some electrical trouble back of the instrument panel, and the driver pulls in the shop for emergency repairs. The floor boards and dash are uncomfortably warm.

The mechanic, after gathering all necessary tools and a drop cord, lays down on his back through the right door, head on the boards and feet down low outside. He draws his head up and back of the instrument panel at the same time, curving his ribs around the mess of shifting, dump, trip levers, and emergency brake lever. Then, if possible, draw in his feet and drop them on cushion, if not leave them up in the air near roof of cab.

With the hot, bright glare of the drop light in his face, and lying on his right side in such a position that he can't use his right hand to any advantage, he starts to work with his left hand among a mass and maze of wires, flexible control cables, panel brace, air brake tubing and a cab heater. His first move knocks some dirt in his eyes. He can't wear goggles because his face is only about six inches from the work. Then, to top it all, he drops the little screw driver and it rolls down behind and under him—xqxqxq!!

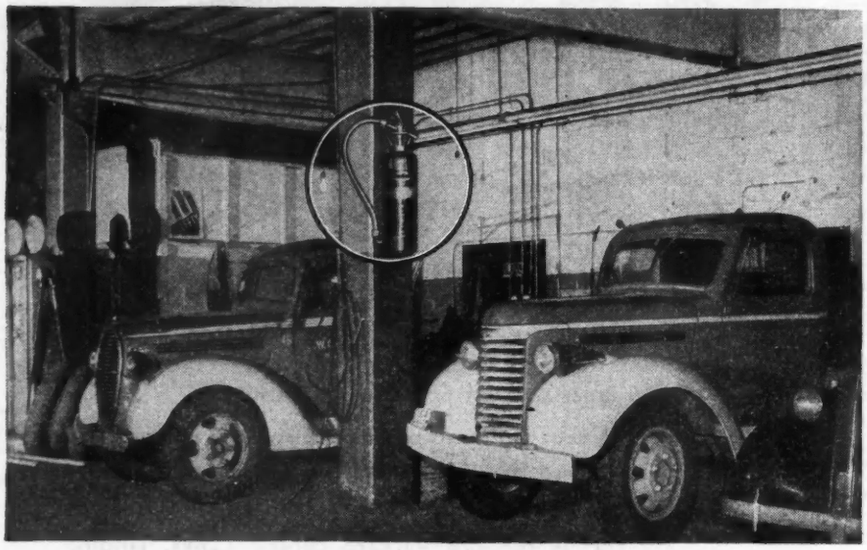
May I suggest a hinge or an arrangement whereby the instrument panel may be extended?

ARTHUR M. RHODES,
Master Mechanic,
Dept. of Highways,
Olympia, Washington

END

(Please resume your reading on P. 51)

Worth its Weight in New Motor Trucks!



DUGAS FIRE EXTINGUISHERS charged with PLUS-FIFTY DUGAS DRY CHEMICAL mean a faster knockout of garage fires!

Garage fires often start fast. But they're quickly stopped when PLUS-FIFTY DUGAS Dry Chemical hits flames.

The instant it strikes fires involving flammable liquids, gases or electrical equipment, PLUS-FIFTY DUGAS Dry Chemical releases inert gases and vapors that shut out oxygen, smother fire. Like snuffing out a candle!

Non-toxic, non-corrosive, non-abrasive—and has a long, effective fire-stopping range. Safe!

Send for new DUGAS catalog today!

CHART showing characteristics of all types of approved hand fire extinguishers sent free on request.

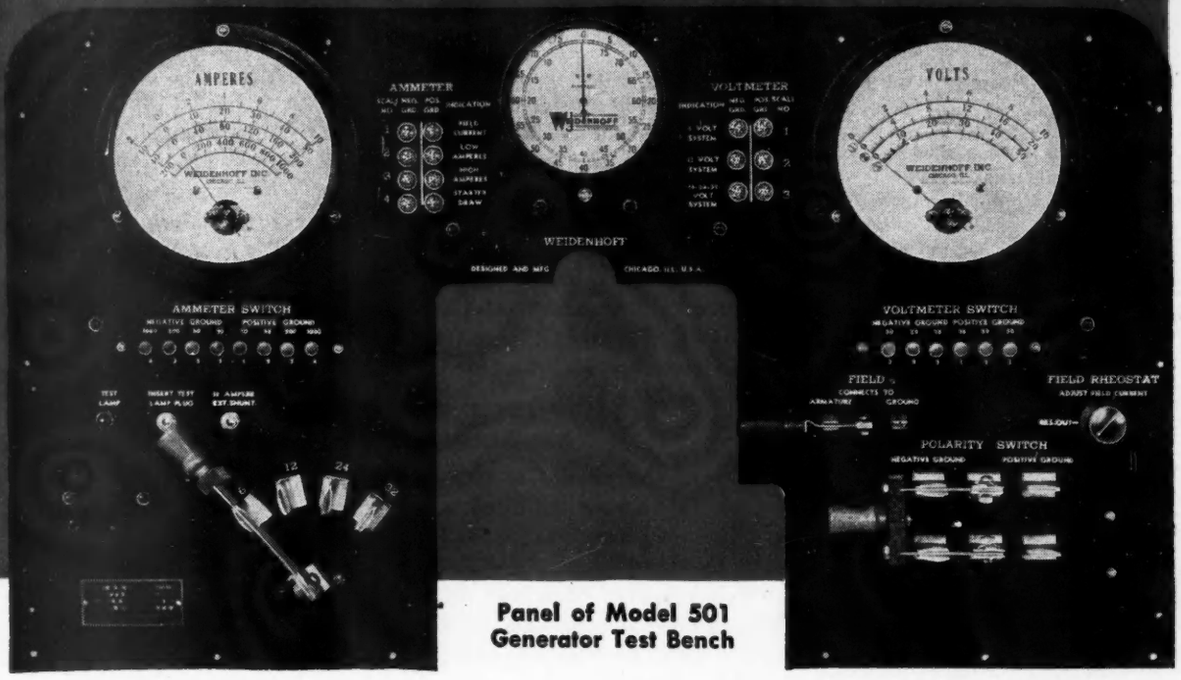
MODEL 15-T HAND EXTINGUISHER

CCJ-11-3-44

ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN
DUGAS DIVISION

Precision Control

FEATURES WEIDENHOFF TEST BENCHES

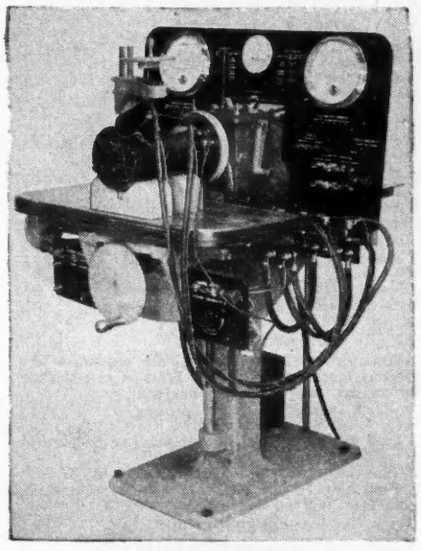


Panel of Model 501 Generator Test Bench

● **The operator of a Weidenhoff Test Bench has at his finger tips a conveniently arranged observation and control panel with meters, switch, controls and indicating instruments easy to see, to use and to understand.**

● **On the Model 501, for example, the circuit under test is indicated by one of the red or green signal lights working in conjunction with push button circuit selector switches. Simply push the button. If polarity is reversed, as indicated by meter—just push the other button. No need to change connections to generator.**

● **The comprehensive instrument panel is one of many exclusive features, which combined, make Weidenhoff Test Benches universally popular and profitable for servicing modern generators, regulators and starting motors. Full information available.**



MODEL 501 Generator Test Bench

ENGINE ANALYZERS • BATTERY CHARGERS • MAGNETO TESTERS

JOSEPH WEIDENHOFF, INC.

CHICAGO 24, ILLINOIS

AUTOMOTIVE SERVICE WEIDENHOFF EQUIPMENT AVIATION

TEST BENCHES • ELECTRICAL TESTING AND SERVICE EQUIPMENT

Wear Standards a Postwar Possibility

TABLE 4—BROWN-LIPE CLUTCH

"Q" TYPE

PRESSURE PLATE

Max. width driving slot = .508 in.
Max. depth pockets in cam due to lever movement = .010 in.
Max. depth score grooves permitting salvage by regrinding friction surface = .015 in.
Max. depth of score grooves permissible without regrinding friction surface = .005 in.
Max. out-of-flat permissible without regrinding = .007 in.

LEVER

To be scrapped if contact area for pressure plate and release sleeve groove is pitted or grooved.

RELEASE SLEEVE

To be scrapped if wear-in lever groove is 1/32 in.

SPRING

Load loss up to 10 per cent permissible before replacement.

DRIVEN PLATE

Replace disc (or facings) if there is any evidence of oil on the surfaces. Even a very small amount of oil may cause severe chatter.
When facings are worn to the rivet heads or within .010 in. from the heads, a new disc (or facings) should be installed.
Burned facings should be replaced.
It is better to replace the entire disc assembly than to reface. Special tools and skilled workmanship are required for attaching facings to the driven member.
Max. play of disc on splines should not exceed 3/32 in. measured at periphery. Replace disc if splines are worn. Be sure to check alignment between engine and transmission whenever excessive spline wear is found.
Replace entire driven plate if excessive play has developed in damper parts. Max. free play at periphery should not exceed 1/16 in.

TABLE 5—BROWN-LIPE CLUTCH

"A" TYPE

COVER

Max. total wear lanced holes = .005 in.
Max. play between pressure plate lug and lanced hole in cover = .015 in.

PRESSURE PLATE

Max. depth score grooves permitting salvage by regrinding friction surface = 3/64 in.
Max. depth grooves allowable without regrinding friction surface = .005 in.
Max. depth side wear of levers into pressure plate lugs allowable before plate should be scrapped = .010 in.
Max. out-of-flat permissible without regarding = .007 in.
Max. depth of wear of cover lanced holes into sides of pressure plate lugs before scrapping = .010 in.

LEVERS

Max. width of worn area at inner end where lever contacts bearing = 3/16 in. Scrap if case-hardened surface has worn through at any point.

SPRINGS

Load loss up to 10% allowable before replacement.

EYEBOLTS

Replace if flat on bottom of hole is worn hollow more than .005 in.

EYEBOLT PIN

Replace if pin has rough or pitted areas.

DRIVEN PLATE

Replace disc (or facing) if there is any evidence of oil on the surfaces. Even a very small amount of oil may cause severe chatter.
When facings are worn to the rivet heads or within .010 in. from the heads, a new disc (or facings) should be installed.
Burned facings should be replaced.
It is better to replace the entire disc assembly than to reface. Special tools and skilled workmanship are required for attaching facings to the driven member.
Max. play of disc on splines should not exceed 3/32 in. measured at periphery. Replace disc if splines are worn. Be sure to check alignment between engine and transmission whenever excessive spline wear is found.
Replace entire driven plate if excessive play has developed in damper parts. Max. free play at Periphery should not exceed 1/16 in.

(CONTINUED FROM PAGE 39)

military vehicles service data such as we are seeking have been developed, to an extent, for the use of the military services.

In many instances we have been told by parts makers that, owing to the survey we have undertaken, they will give the problem the attention it deserves. But we shall have to wait until the pressure of war business permits them to do the job.

Let us now consider the available information based upon the survey made by COMMERCIAL CAR JOURNAL. This is analyzed below according to a classification of major elements or assemblies.

Engines

At the present writing the engine builders have indicated a willingness to cooperate to the fullest extent. However, none of the manufacturers is prepared to release data on wear limits. They promise to do so at the earliest possible moment.

Pistons and Rings

The literature on these parts is extensive owing to the fact that a great deal of work has been done on rings and pistons by many people not only for standard equipment but for the replacement field as well.

Table 1 gives the recommendations prepared by the Muskegon Piston Ring Co. for this survey. In general, they are based upon SAE standards prevailing in this field.

Table 2 gives generalized recommendations and precautionary suggestions compiled by Koppers Co., American Hammered Piston Ring Div.

Sealed Power Corp. submitted a new manual, "Oil and Gasoline Economy Manual," of interest to fleetmen. Here are a few excerpts from it:

"Modern service rings are designed to compensate for a reasonable amount of cylinder wear. Sealed Power Individually Engineered Ring Sets are designed to function satisfactorily in cylinder bores up to 0.015 taper. Beyond this point reboring is recommended for long life and greater efficiency.

"Check the clearance between new ring and ring groove. This should not be less than 0.0015 in. and not more than 0.004 in. Pistons which are cracked or do not meet these checks should be replaced. Lo-Ex pistons are now being used by many manufacturers as original equipment and also furnished for replacement in older models which were originally equipped with cast iron, steel strut or aluminum pistons."

Valves

Service data on valves has been promised by the major producers but

(TURN TO PAGE 192, PLEASE)

TABLE 6—EATON AXLES

Dimensions given are a fair average of the entire line

PARTS	SPECIFIED FIT OR CLEARANCE	SERVICEABLE AFTER WEAR
Gear mesh, bevels—backlash	.008 to .015	.018
Herringbone mesh—backlash	.010	.015
Gear mesh—differential backlash	.010 max.	.015
Spline fit—differential and axle shaft O. D.	.030 to .055 loose	
Spline Width	.002 to .008 loose	.010
Spline fit—Pinion shaft end O. D.	.003 to .008 loose	
Spline Width	.001 tight to .003 loose	.004
Bearing fit—cones where free—Pinion End	.001 loose to .0005 tight	Loose – .002
Bearing fit—cones where free—Housing Tube	.0002 to .0017 loose	Loose – .002
Bearing fit—cones where free—Front Axle inner wheel brg.	.0005 to .0015 loose	Loose – .002
Bearing fit—cones where free—Front Axle outer wheel brg.	.0005 to .002 loose	Loose – .003
Bearing fit—cones where tight—Inner Pinion Shaft Brg.	.0005 to .002 tight	....
Bearing fit—cones where tight—Diff. Brg. L. H. Side	.0015 to .0035 tight	....
Bearing fit—cones where tight—Diff. Brg. R. H. Side	.0015 to .0035 tight	....
Bearing fit—cups where tight—Pinion Brg. Cage	.0015 to .003 tight	....
Bearing fit—cups where tight—Wheel Brgs. Inner and Outer	.001 to .0035 tight	....
Bearing fit—cups where free—Diff. Brgs. L. H. and R. H. Side	.0005 tight to .0015 loose	.002
Differential side pinion and spider	.002 to .004 loose	.006
Side gear in differential case	.004 to .007 loose	.009
Internal gear idler pinion and pins	.0045 to .0065 loose	.009
Axle tube in housing—tight	.002 to .005 tight	....
King pin fit in I-beam	.000 to .0015 loose	.002
King pin fit in knuckle bushings	.0005 to .002 loose	Loose – .003
Differential washers back of gear	.0005 tight to .0045 loose	Loose – .008

Gar Wood Industries, Inc., manufactures Truck and Trailer Equipment including Hydraulic and Mechanical Hoists, Dump Bodies, Tanks, Flushers, Sprinklers; Winches, Cranes, Pole Derricks, Power Take-Offs; also Road Machinery including 2 and 4 Wheel Hydraulic Scrapers, 4 Wheel Cable Scrapers, Hydraulic and Cable Dozers and Trailbuilders, Hydraulic and Cable Rippers and Tamping Rollers; also Heating Equipment and Motor Boats.

Gar Wood superior products are produced for a wide variety of uses and for every requirement.

Eleven FACTORIES
Six DIVISIONS

HOISTS & BODIES
WINCHES & CRANES
TANKS
ROAD MACHINERY
HEATING EQUIPMENT
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Branches and Distributors located in all Principal Cities

GW **GAR WOOD**
INDUSTRIES, INC., DETROIT
WORLD'S LARGEST MANUFACTURERS OF TRUCK AND TRAILER EQUIPMENT

WEAR STANDARDS A POSTWAR POSSIBILITY

(CONTINUED FROM PAGE 190)

was not available in time for publication at this time. This material will be published as received.

Thompson Products has developed some useful information especially for this survey which is shown in Table 3, which will be found on Page 39.

Steering Gears

GMC Truck & Coach Division has given the following maintenance information on Saginaw recirculating ball steering gears used on GMC trucks built in 1941 and 1942. Where the same models are continued in 1944 the same specifications and service data apply.

Clearance Between

Sector shaft and bushing—outer: 0.0035 to 0.0045 in.

Sector shaft and bushing—inner: 0.0015 to 0.0025 in.

Adjustments

Worm shaft: No perceptible end play.

Sector shaft thrust: Screw.

Sector shaft end play: Not perceptible.

Ross Gear and Tool Co. advise that Ross ears are adjustable for wear of all mating components except for the fit of lever shaft in the bushings. This implies that replacement of parts is a matter of judgment as to the condition of wearing surfaces rather than a function of dimensional changes. Regarding fit of the lever shaft in its bushings, Ross recommends replacements where sufficient wear has occurred to permit a 0.007 in. feeler in the clearance space. If the shaft is replaced, Ross recommends replacement of the bushing. However, if the bushing alone requires replacement, and if the shaft is in good condition with wear less than specified, the shaft need not be replaced.

Clutches

On the subject of clutches, two reports were available at the time we went to press—Borg & Beck and Lipe-Rollway.

Lipe-Rollway says that pressure plates badly scored or dished in excess of 0.015 in. should be replaced. Driving lugs of new pressure plates must fit freely in the slots of the flywheel ring with a clearance of 0.003-0.004 in.

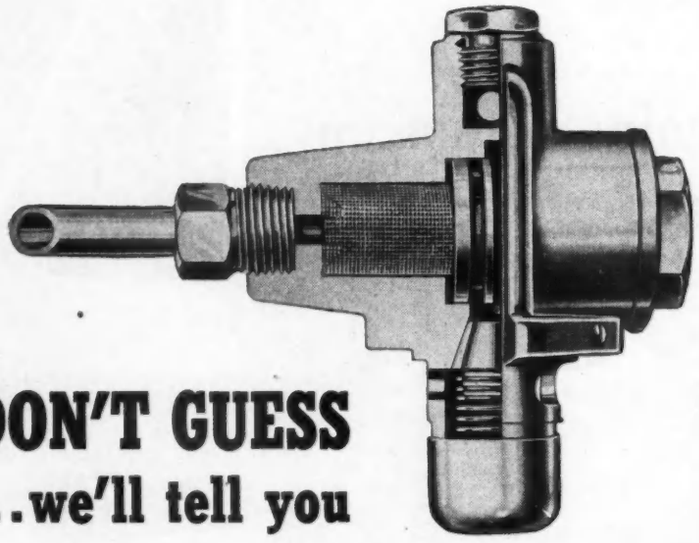
Borg & Beck believes it inadvisable to give limiting dimensions for component parts. In their opinion it is better to show clearances which can be measured by a feeler rather than to provide special tools and gages for checking dimensions. Several points of the B & B clutch subject to wear have been deliberately omitted from discussion as the manufacturer is convinced that the clutch will function properly regardless of wear at these points.

Borg & Beck supplies two general types of clutches—the "A" type and the "Q" type—each one made in a variety of sizes. The general service instructions for each type apply to all models for each type. Table 4 gives the pertinent service data for the "Q" type; Table 5 for the "A" type.

Brakes

When it comes to brakes the manufacturers feel that only certain criti-

(TURN TO PAGE 195, PLEASE)



DON'T GUESS
...we'll tell you

This is a "cut-away" view, actual size, of the VISCO-METER* —6 ounces of precision equipment which, when installed on any engine...gasoline or Diesel ...becomes the protector or "watch dog" of engine lubrication. Through a gauge (not shown) the engine operator has a constant visual report indicating whether or not the engine and all its working parts is being adequately lubricated. VISCO-METER'S*, exclusively, have been rendering this valuable service since 1928. They're available again for peacetime engines.

...and this is a booklet we have prepared to tell every design engineer, manufacturer, distributor, or user of gasoline and Diesel engines the entire story of VISCO-METER*. Write, wire or phone for your copy. If you say so, a VISCO-METER* engineer will deliver it.

VISCO-METER
CORPORATION BUFFALO 7, N. Y.

*Fully covered by U. S. and Foreign Patents

WEAR STANDARDS A POSTWAR POSSIBILITY

(CONTINUED FROM PAGE 192)

cal elements require data on fits and clearance. Thus, the Bendix Products Div., Bendix Aviation Corp., advises that the only points they can cover are the brake shoe heel and toe clearances. Even then the recommendations made by Bendix may not jibe with the data supplied by the vehicle producers owing to the differences in power brake testing procedures, the influence of the individual hook-up, position of the foot pedal, etc.

So far as brake lining is concerned, brake manufacturers believe it is only logical that when the lining becomes worn close to the rivet, it must be replaced without reference to dimensional tolerances.

Bendix-Westinghouse Automotive Air Brake Co. has prepared a comprehensive manual on the maintenance of air brake systems for the Ordnance Department. A sampling of comments on wear limits is quite pertinent.

"*Compressor*—Wear of unloading valve stems must not exceed 0.002 in. If discharge valves are grooved deeper than 0.003 in. where they contact the seats, they must be replaced. Oil seal ring in the end cover must be a neat fit in the groove and have 0.008-0.015 in. clearance at the gap when placed in end bore of the crankshaft. Cylinder bores scored or out-of-round more than 0.003 in. or tapered more than 0.03 in. must be rebored, ground, or honed oversize. Piston fit to bore diameter must have clearance between 0.002 and 0.004."

This excerpt proves that a complete job of analyzing each element of a mechanism can be done and marks an invaluable guide to proper maintenance.

The Timken-Detroit Axle Co. prefers to leave the matter of service instructions, as to permissible wear, to the vehicle producer so as to avoid misunderstanding. The only items released for publication are the following wear limits:

Brake camshaft bushings (babbitt or bronze): 0.025 in. loose.

Brake drums—light type with light linings: 1/16 in. on a side.

Brake drums—heavy type with thick linings: 3/32 in. on side.

Axles and Transmissions

The general reaction on the part of leading manufacturers is that it is not practical to supply detailed information as to wear limits, particularly when dealing with finely made gearing, well fitted spline shafts, etc. Gears may pit or break before they wear; shafting may break before it wears, under conditions or abuse or overloading or heavy duty. In any event, it is felt that any supplementary data on wear limits will have to come from the vehicle manufacturer.

Timken-Detroit contributes the following wear limits on axle parts:

Bevel drive thrust pinion bearings: 0.005 loose.
Rear wheel bearings (full floating): 0.012 loose.
Wormshaft thrust bearings: 0.006 loose.
Front wheel bearings: 0.008 loose.
Front axle steering ball: 1/16 in. max. wear on diameter.
Front axle steering knuckle pins: 0.003 undersize.
Front axle steering knuckle pin bushings: 0.003 oversize.
Trailer axle wheel bearings: 0.012 loose.

The axle division of Eaton Manufacturing Co. has submitted some valuable information on wear limits

(TURN TO PAGE 198, PLEASE)

SPEED TRUCK REPAIRS

BY CLEANING THEM 8 TO 10 TIMES FASTER

The JENNY STEAM-SPRAY WAY

You don't need to be told how important your trucks are to the war effort. You know it!

But do you know that cleaning them with Hypressure JENNY prolongs their service life, increases their efficiency and adds extra "pay miles" to their schedules? It does, because HYPRESSURE JENNY Steam-Cleaning *before* repairs, cuts "lay-up" time almost in half by saving up to 40% of mechanics' time usually lost wiping dirt and grease from tools and equipment. And periodic JENNY Steam-Spray cleaning your trucks every time they come in off a long run, not only rids them of accumulated road dirt that often adds as much as 400 lbs. dead weight, but often uncovers cracks and defects permitting repairs before costly, time-consuming road failures occur. JENNY increases shop and garage efficiency too, by thoroughly and economically cleaning pits, floors, runways, walls, windows, skylights, etc., 8 to 10 times faster than by outmoded hand methods.

Hundreds of fleet owners are using HYPRESSURE JENNY to speed truck repairs and prolong the life of their equipment. You can too. Why not write today for full particulars?

HYPRESSURE JENNY DIVISION OF

HOMESTEAD VALVE MFG. CO.

MAKERS OF "PEAK PERFORMANCE" VALVES FOR 50 Years 1892 1942

P. O. BOX 90 • • • CORAOPOLIS • • • PENNSYLVANIA

New Hydraulic Control for Trucks and Busses

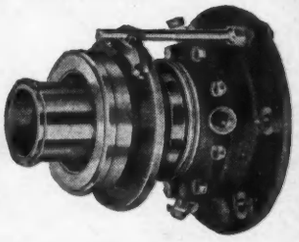
In heavy-duty operation such as illustrated, the Hydrolease will offer particularly important advantages.

Here's a remarkable new hydraulic development revolutionizing operation of clutch throw-out mechanisms in heavy-duty motor vehicles.

The PESCO *Hydrolease*, a hydraulic clutch actuator, brings the smooth, positive force of hydraulics to clutch control. It materially reduces clutch pedal load, easing operation and strain on both driver and vehicle. It makes clutch pedal action more accurate, reduces wear and maintenance on the clutch, and eliminates many mechanical parts.

The PESCO *Hydrolease* has been thoroughly tested in the laboratory and *on the road*. It's ready for specification now. Write for full details. PESCO Products Co., Automotive Division J, 11610 Euclid Ave., Cleveland 6, Ohio.

PESCO HYDROLEASE



IMPORTANT ADVANTAGES

1. New ease and smoothness in clutch operation. Clutch response is more accurate. Eliminates "creeper gear jerk".
2. Lightened clutch pedal load, approximately 50 per cent less.
3. Constantly adjusted clutch clearance between the clutch release bearing and the clutch throw-out mechanism. Saves clutch plate linings.
4. Reduced weight, reduced number of working parts, reduced maintenance cost.
5. On one typical bus installation the PESCO *Hydrolease* eliminates 42 working parts, 19 points of lubrication . . . and its cost, 60 per cent less.

In Precision Hydraulics, Fuel Pumps, Air Pumps, Related Accessories . . .
PERFORMANCE POINTS TO Pesco FIRST

THE ONLY "TRIPLE-ACTION" HYDRAULIC SHOCK ABSORBER

Look To MONROE

● Monroe Hydraulic Shock Absorbers *went into* this war with a great record of performance on leading makes of trucks, buses and motor cars. Monroe Hydraulic Shock Absorbers will *come out of* this war with the most amazing record of performance in the history of shock absorbing devices.

Monroe Hydraulics have absorbed all the shocks of war, on thousands of war vehicles. The only "triple-action" hydraulics, with the exclusive, patented "middle-zone-control," Monroes are also the only shock absorbers to be adopted as standard on General Sherman Tanks.

For more advanced performance in the control of road shocks; for economy of maintenance; safety to cargo and passengers on wartime or postwar equipment, LOOK TO MONROE! Our engineers will gladly consult with you, if you write.

MONROE

MONROE AUTO EQUIPMENT CO. . . MONROE, MICH.

The Only Shock Absorbers Adopted as Standard for a United States Army Tank

WEAR STANDARDS A POSTWAR POSSIBILITY

(CONTINUED FROM PAGE 195)

for its line. This material is reproduced in Table 6.

Conclusions

It is evident from the foregoing that at the present state of the art the meaty information on wear limits is not yet generally available. However, with the inception of this CCJ-inspired study many manufacturers have placed the project on their "must" list and have agreed to do something for fleetmen as quickly as wartime pressure permits. It will be our job to keep the pot boiling until the final returns are in.

One point deserves continued emphasis. Generalized information will not do the trick. Vehicle manufacturers and parts makers are on the horns of a dilemma, since the real pay-off lies in the service history of specific equipment in the hands of fleet operators. A truck manufacturer would like to tell his customers that certain units should be inspected and serviced at stated mileage intervals. But the trouble is that you can't use a mileage figure as a cold statistic. Everything depends upon what kind of miles you put in.

END

(Please resume your reading on P. 40)

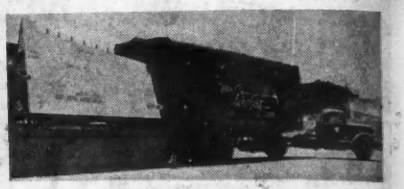
For Slippery Days Ahead

Tires are getting "smoother" and roads are getting "slicker" as winter approaches. From now on trucks and cars will have to depend on whatever Tire Chains are available—and in these days of short supplies it's more important than ever to equip your cars and trucks with Wesco Tire Chains for their greater wear and longer service.

If you *already* have Wesco Tire Chains left over from last season, they'll *still* give you service. Don't buy new ones—conserve yours wherever possible—keep them clean and dry—keep them repaired and *ready, for any* road emergency. Use them *only* when necessary and remove them at once when roads are clear.

WESCO
TIRE CHAINS

WESTERN CHAIN PRODUCTS CO.
Div. of Central Safety Deposit Co.
1801 Belmont Ave. Chicago 13, Ill.



Only through the closest coordination of plant activities, made possible by motor transportation facilities, could Vega Aircraft Corp. maintain its high production schedules. The company is operating two plants in Fresno, employing 950; two in Bakersfield, employing 650; one in Taft, employing 150; and one in Santa Barbara, employing 750, in addition to its large headquarters assembling plant in Burbank. A modern fleet of White WA-20 Super Power Trucks equipped with 20 ft. to 35 ft. Fruehauf panel trailers closely link the various production plants with the final assembly plant. Raw materials and parts are hauled to the outlying manufacturing centers, and completed parts or sub-assemblies are brought in to Burbank on the return trip. The White Super Power Trucks act as a conveyor belt 225 miles long, linking Burbank with Fresno and the other intermediary points. They are operated 8 hours a day on shuttle service. The flow of raw materials and parts is timed with clocklike precision, day and night

The St. Paul Hydraulic Hoist Co. of Minneapolis has developed a new hoist subframe to protect the truck frame from the concentrated shock loads and stresses that are caused by travel over rough roads and by dumping in distorted positions. This protection is achieved through greater flexibility in the hoist subframe and by full length, direct contact between it and the truck frame. St. Paul Hoist states that with its new standardized frame, the job of mounting the hoist on a new truck is simplified

TYPICAL DIESEL LUBRICATION PROBLEMS:

5. Liner Wear

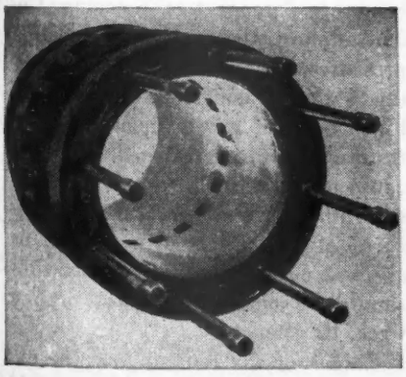
Wear on Diesel liners is commonly concentrated in the high-temperature belt near the combustion chamber. This is largely attributable to the inherent inability of most lubricating oils to "wet" hot metal surfaces.

Unlike spark ignition engines in which a partial vacuum in the combustion space during the intake stroke assists in drawing oil toward the upper compression rings, Diesels operate at or above atmospheric pressure in the combustion space which tends to drive oil away from the rings.

It is imperative then—to prevent relatively dry operation in the top piston ring high-temperature area—for the lubricant to have high-temperature adhesion characteristics.

To achieve this high adhesion factor under all operating conditions in RPM DELO Diesel Engine Lubricating Oil, a special compounding material was added. With this additive, RPM DELO will not run away from hot surfaces, thus preventing metal-to-metal contact on hot-running engine parts.

A typical example of the effectiveness of RPM DELO in preventing liner wear is offered by the Chicago, Rock Island and Pacific Railroad. One of its "Rocket"



Liner fro[illegible] Rock Island "Rocket" engine showing wear of only .001 in. after 157,076 miles on RPM DELO without an oil change.

These charts of one of the tests required by the Army in certifying oil for use in combat equipment, graphically illustrate (right) marked increase of liner wear in upper cylinder zone due to inability of straight mineral oil to provide full lubrication of this high-temperature area; and (left) reduction of liner wear by ability of RPM DELO to stick to these hot spots.

Diesel powered locomotives ran 157,076 miles on RPM DELO without an oil change, with liner wear of only .001 in.

Other causes of liner wear minimized by RPM DELO include:

1. Corrosion caused by carbonic and other acids at low temperatures.
2. Scuffing of liners from rocking of piston rings in worn grooves.
3. Scoring and scratching of liners due to stuck piston rings.

Reducing liner wear to a remarkable degree is but one of RPM DELO'S advantages in solving Diesel engine maintenance problems. Its other properties include: The ability of RPM DELO to eliminate ring sticking, to stop excessive deposits on rings and ports, and to prevent bearing corrosion.

RPM DELO has world-wide distribution and is marketed under the following names: RPM DELO, Caltex RPM DELO, Kyso RPM DELO, Signal RPM DELO, Sohio RPM DELO, and Imperial RPM DELO (concentrate). Ask your Diesel engine manufacturer or distributor for the RPM DELO supplier in your vicinity.

RPM DELO

Write on your letterhead for free booklet on RPM DELO, *Standard of California, Dept. T-12, San Francisco, California*

STANDARD OF CALIFORNIA

Care and Use of Synthetic Tires & Tubes Summarized by ODT

Synthetic tires and tubes will have to be handled and used with greater care than that usually given natural rubber products, W. J. Cumming, chief of the maintenance section of the Office of Defense Transportation, warned the nation's truck and bus operators. Mr. Cumming's statement was made in connection with the publication of an ODT maintenance bulletin, No. 41, on the care and use of synthetic rubber tires.

Mr. Cumming said: "Because of present limited supplies of tires and tubes, commercial motor vehicle operators will have to be additionally careful of synthetic tires in order to get the full mileage being built into the synthetic rubber products. Synthetic rubber tires are more sensitive to abuse and mishandling and for this reason their care and use must be carefully watched.

"To avoid blowouts and lay ups of equipment, it will be necessary to school operating personnel in Tire and Rim Association's recommendations on inflation pressures, loading, speeds, etc. Attention, moreover, will have to be given to the proper lubrication of tubes and insides of casings with recommended soap solutions when tires are first mounted, to careful breaking in of new tires, to rotation and mating of dual tires, to frequent correct inflation when tires are cool and retreading at the proper time."

"Synthetic rubber in tread stock," the bulletin says, "is not as resistant to cuts and tears as natural rubber, especially when the tread is hot. Because of the reduced resistance of hot synthetic rubber, running over curbs or similar sharp obstacles may tear chunks out of the thread or may cause a separation between the tread and casing at the point of impact."

The bulletin stresses that "tires should be 'broken in' under light work" if the best service results are to be obtained. This working of the tire under light loads permits the casing to stretch or 'grow' slowly and permits the tread to follow better the growth of the casing without cracking."

In discussing inflation methods, the bulletin says:

"Overinflation of cool synthetic tires, above the Tire and Rim Association recommendations, in the mistaken idea that a greater than rated load can be carried, may result only in severe damage to the casing. Under-inflation, below 'cool' inflation pressures will permit excessive flexing of tire casings, and this, combined with the greater heat 'build-up' resulting from excessive flexing, will cause premature blowouts or failures of synthetic tires. The inflation pressures of heavy-duty tires should be checked daily and lighter loaded tires should be checked at least once a week, or oftener.

Copies of the bulletin may be obtained from ODT district and field offices or from the ODT Maintenance Section, Washington, D. C.

ON EVERY FRONT
PERFORMANCE DEPENDS ON CLEAN ENGINES

Engines free of gum and sludge last longer—perform more smoothly and efficiently. Clean engines keep tank and bus, jeep and car out of repair shops and on the road.

LOOSITE cleans the engine and SILOO keeps it clean. Protective maintenance with these safe, swift-working sludge solvents insures complete lubrication—protects all vital working parts of the engine.

If you have any petroleum residue problem, even of highly specialized nature, write for complete data engineered to your needs. No obligation, of course.

LOOSITE: to clean the engine
SILOO: to keep it clean

Petroleum Solvents Corp.
Solvents for all types of petroleum residues
NEW YORK • CHICAGO • SAN FRANCISCO • DALLAS
GENERAL OFFICES: 331 MADISON AVE. NEW YORK 17 N. Y.

Mr. Hi-Q Offers "Hot Tip" for Cold Weather Driving

Mr. Hi-Q: Good morning, gentlemen! I see you are having a little battery trouble today.

Bus Manager: A little trouble? Say, we're having *plenty* of it . . . and these cold mornings don't help a bit.

Mr. Hi-Q: Tell me, have you ever considered standardizing on your *manufacturer's highest quality batteries?* I believe that would eliminate a lot of this grief and help you keep your busses on the road where they're so badly needed.

Bus Manager: Perhaps *they* would help some, but how much do they cost?

Mr. Hi-Q: Not a great deal more than ordinary batteries. Besides, many bus operators maintain that top-quality batteries actually *cost less per mile* in the long run.

Bus Manager: Are they really so much better?

Mr. Hi-Q: I'm sure you'll find that they will last longer, stand up better. They have stronger plates, better separators and heavier cases. Also, most manufacturers equip these batteries with Fiberglas* Retainer Mats.

Bus Manager: Just what function do they serve?

Mr. Hi-Q: Standard tests show that they greatly reduce battery failures formerly traceable to shedding of power-producing material from the positive plates.

Bus Manager: That *should* help.

Mr. Hi-Q: It sure does. Tests show that batteries equipped with Fiberglas last up to twice as long as the same batteries without the mats.

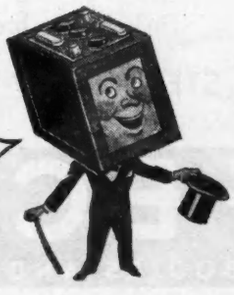
Bus Manager: *Now*, you're talking my language. Will my regular distributor have these batteries?

Mr. Hi-Q: Yes! Just ask him for his manufacturer's top-of-the-line batteries . . . Fiberglas-equipped, of course.

Owens-Corning Fiberglas Corporation, 1960 Nicholas Building, Toledo 1, Ohio. In Canada, Fiberglas Canada Ltd., Oshawa, Ontario.

ARMY E NAVY

YOU CAN'T FIND A BETTER BUY THAN THE BEST BATTERIES— FIBERGLAS-EQUIPPED



FIBERGLAS

*T. M. Reg. U. S. Pat. Off.

BATTERY RETAINER MATS

Winter Driving Tips for Drivers

by RALPH A. MOYER

Chairman, Committee on Winter Driving Hazards, National Safety Council and Research Associate Professor of Highway Engineering, Iowa State College

WITH THE present critical shortage of labor, skilled mechanics and spare parts, preventive maintenance of equipment is an absolute necessity to keep our vehicles rolling. Preventive maintenance is an important accident prevention measure in the winter time. All standard and special equipment for winter use should be checked, serviced and repaired where necessary before freezing weather starts. The most important items which require checking are brakes, windshield wipers, heaters, heater - defrosters, windshield fans, the electrical system, including the generator and battery, the exhaust system for deadly carbon monoxide leaks in the line or in the muffler, anti-freeze and radiator leaks, headlights, fog lights, tail lights and stop-lights, tires and tire chains.

Tires should be recapped as soon as the smooth tread condition develops. This will not only prolong the life of the tire but will reduce the hazard of skidding, especially on wet, muddy or snow-covered surfaces.

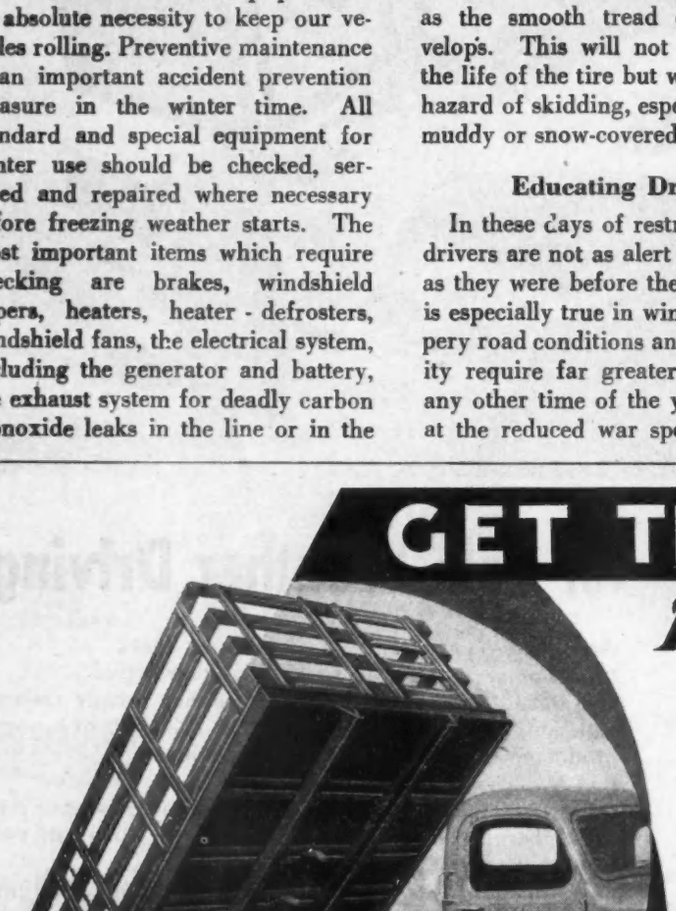
Educating Drivers

In these days of restricted driving, drivers are not as alert and as skilled as they were before the war and this is especially true in winter when slippery road conditions and poor visibility require far greater skill than at any other time of the year. Driving at the reduced war speeds gives the driver a false sense of safety when the slippery winter road conditions develop. The 35 m.p.h. speed presents few difficulties on dry pavements but driving at this speed on an icy pavement is certain to invite disaster. At the beginning of each winter it appears necessary for a large percentage of drivers to be involved in one or more accidents or near-accidents before they fully realize how dangerous the slippery winter roads can be and how great the risk is of driving at excessive speeds on those long, dark winter nights, or with the windshield fogged or frosted. In view of the critical state of motor vehicle equipment today, it is important that every driver be informed in regard to the serious nature of winter driving hazards and the safe driving practices to prevent needless winter accidents. The Committee on Winter Driving Hazards of the National Safety Council will again use every means at its disposal to publicize this information.

Some of the major items which should be stressed are the following:

1. The two major winter hazards

GET THE MOST -
In Economical Reliable Service



PERFECTION'S "7400" STEEL PLATFORM STAKE BODY for all makes of Trucks offers maximum loading space. . .low mounting height . . .built-in rub rail. . .all steel understructure. . . easy installation. . .superior strength and rigidity.

PERFECTION'S HYDRAULIC HOIST sends the body up s-m-o-o-t-h, but fast! And down the same way--without jolts or jars. Heavy duty construction throughout. Two rigid, widely spaced lifting-arms reduce body sway and weaving. Write for Bulletin and prices.

THE PERFECTION STEEL BODY CO. GALION, OHIO

ARMY E NAVY 4-th CITATION FOR WAR PRODUCTION

PERFECTION
TRUCK BODIES AND HOISTS

are slippery, wet, mud, snow, or ice-covered roads and city streets, and reduced visibility caused by long hours of darkness, fog, frosted or fogged windows and windshields, and by heavy snow fall or drifting snow. Speeds must be reduced considerably below the 40 m.p.h. average now prevailing in many parts of the United States to drive safely under practically all of the above conditions.

2. Tests by the Committee have indicated that the average braking distances from 20 m.p.h. for a car or truck with brakes in excellent condition are 21 feet on dry concrete, 26 feet on wet concrete, 69 feet on packed snow, 169 feet on glare ice or sleet, and 228 feet on wet ice at thawing temperatures. These data clearly indicate why speeds should be reduced on snowy and icy pavements.

3. The use of tire chains is the most effective and practical form of self-help for the motorist in increasing traction on slippery, icy and snowy roads. Chains on rear wheels in tests by the Committee reduced braking distances on glare ice by one-half and on packed snow by about one-third. On all wheels they reduced braking distances on glare ice and on snow to almost one-third the values obtained without chains. The safe speeds on curves were not improved by chains on rear wheels because the friction and steering on curves is controlled largely by the front wheels. The use of chains on both front and rear wheels permitted safe operation on icy and snowy pavements on curves at very nearly the same speed as the comfortable speed on these curves under dry pavement conditions.

4. Drivers should apply brakes more easily and cautiously on slippery pavements because the hard application of brakes common in normal driving will lock the wheels on slippery roads and the driver will be entirely helpless to regain steering and stopping control of the car or truck. Reports have been received during the past year but have not been verified by tests by the Committee that certain types of synthetic rubber tires provide less friction to climb steep grades and when braking on pavements covered with snow or ice than pre-war tires. On wet or dry concrete pavements the synthetic tires are reported to be equally as good as pre-war tires on steep grades or when braking.

5. Drivers should follow other vehicles at a safe distance. Stopping distances are four to eight times greater on snowy and icy pavements than on dry pavements. By the same token, drivers should never make a quick stop in front of another vehicle. A rear-end collision may wreck both cars for the duration.

6. Night driving, always more dangerous than daytime driving, is an important winter hazard because the darkness is complicated by uncertain winter weather and road conditions. This calls for reduced speeds after sundown. Also, the proper use of headlights is an important safety feature. The lower beam should be used in snow, sleet, rainstorms and in fog.

7. All drivers should keep posted on winter road and weather conditions. A safe driver is always aware of his limitations and reequipped to get through safely and on time.

GUNK Keeps 'em Flying

Application—
Fogless spray of P-96 concentrate . . . ten parts Solvent Distillate . . . then simply rinse with water hose.

Courtesy U. S. Army Air Forces

GUNK P-96 does what soapy cleaners cannot do . . . cleans clean Army lusterless camouflage paint . . . nothing cleans aircraft engines like GUNK . . . not only takes the cling out of carbonized oil and grease but emulsifies it as well, so that it may be instantly and completely rinsed by sluicing with a water hose. Guaranteed to exceed the performance requirements of the most recent army, navy and air force degreasing and decarbonizing compound specifications.

GUNK facilitates and provides accurate visual inspection of all structural members, controls and engine parts.

GUNK removes thick insulating grease blankets from aircraft, auto or tank engines—restores original thermal efficiency—better cooling.

1 GAL. GUNK P-96 Concentrate Makes 10 Gals. Shipped as a Concentrate.

IF YOUR JOBBER DOES NOT STOCK . . . USE COUPON

CURRAN CORPORATION, Malden, Mass.
Not in stock at my jobber . . . attached to my business letterhead is my check, or M. O. on the condition that you ship me a 1-gallon size GUNK at dealer's net cost, $1.90—(add 10% west of the Mississippi) by FAST PREPAID RAILWAY EXPRESS.

Name .....

Address .....

A FEW PENNIES' WORTH OF KEY COMPOUND MAY SAVE YOU MANY DOLLARS

Every part in your trucks is worth its weight in gold in these days. You can preserve many of them such as crankcase, cylinder head, transmission and differential, gaskets, oil and gas line connections—by sealing them with Key Graphite Paste.

Key lubricates as it seals. It obtains leak-proof joints the first time because it expands when heated and fills out all irregularities. All connections are kept alive; Key does not "freeze".

It's worth a try. Write us for a free sample

KEY COMPANY

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A Two-Minute Job

Undersize or Odd Size Bearings

This compact unit will handle all shell bearings. Bores individual bearing shells to any predetermined size, also resizes eccentric bearings. Handles undersized and special sized bearings. Provides a mirror finish in less than two minutes.

TOBIN-ARP Shell Bearing Boring Machine

Full details sent upon request.

TOBIN-ARP MFG. CO.

2845 Harriet Ave. S. Minneapolis 8, Minn.

Be 100% With 10% • Buy War Bonds

FREE PUBLICATIONS

(CONTINUED FROM PAGE 58)

L218. Ball Bearing Portfolio

Here is what might be called the mechanic's "Bible" on ball bearings. It is a standard, file size, portfolio of 27 technical bulletins dealing with automotive use of ball bearings. Compiled by the technical staff of a well-known manufacturer, each bulletin takes up one phase of the selection, care, installation and maintenance of the ball bearing. Interesting information is given in clear, concise style, well supplemented with drawings, diagrams, and photos.

One bulletin is composed of interchangeable tables for all models and sizes of the ball bearing made by various companies. That feature in itself may save many operators time and money.

In general, the data deal with cleaning, storing, lubricating, installing and adjusting new and old bearings, as well as methods and procedures for reclaiming worn bearings.

The material in this portfolio will be invaluable as a reference file. It will serve as a guide for the veteran mechanic and a "text book" for the apprentice, as few manuals treat this subject so exhaustively and so clearly.

Fill out the free postcard and write No. L218 for your copy.

L219. Operators' Tire Handbook

The correction of faults which waste tire mileage is the subject of a new tire manual entitled, "Operators Handbook." This 4 x 7-in booklet was published by a leading tire manufacturer and dwells on the eight most important factors which affect truck tire life. Then, with practical suggestions, it discusses just what can be done to remedy the faults.

Some of the conditions covered deal with loads carried, load distribution, rims, size and condition of wheels and springs, and how the vehicle is driven. Diagrams, photos, and charts are used profusely to explain the solution of each problem.

The 96 pages of this pocket handbook are filled with pertinent data on every size of tire operating under nearly every known condition.

Another chapter is devoted to instructions on how to mount synthetic

(TURN TO PAGE 252, PLEASE)

PERMITE'S *Baptism of Fire*

IS YOUR POST-WAR GUARANTEE

JEEP roaring through the inferno of war takes more brutal punishment than ever conceived on the toughest proving ground.

America is justly proud of the way her Jeeps have come through their baptism of fire. And we are justly proud that Permite Composite Valves have helped the Jeeps take it.

Again Permite Composite Valves are establishing new records of performance! They have exceptional ability to withstand terrific temperatures for prolonged periods. Under the most severe pounding, they stand up and give long, trouble-free service.

This same ability to take unusual punishment is demonstrated regularly by other Permite Replacement Parts. That is why so many leading fleet operators turn to Permite Parts for the replacements needed to keep their cars and trucks moving under the stress of today's demands.

Permite Parts are available through a coast-to-coast network of Permite distributors and jobbers.

ALUMINUM INDUSTRIES, Inc. - - CINCINNATI 25, OHIO

The **PERMITE *Line***

- ALUMINUM ALLOY PISTONS
- SEMI-STEEL PISTONS
- PISTON PINS
- VALVES
- VALVE GUIDES
- VALVE STEM KEYS
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- BOLTS
- BOLT SETS
- TIE-ROD ENDS
- BUSHINGS
- WATER PUMPS
- WATER PUMP REPAIR KITS
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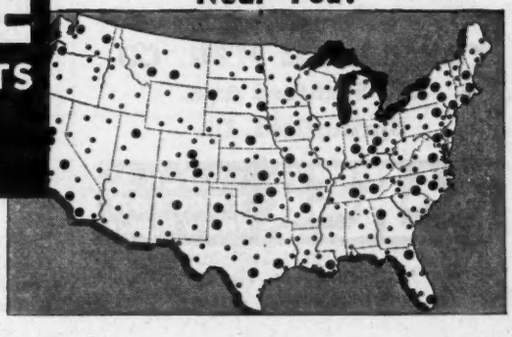
- MUFFLERS AND CLAMPS
- TAIL PIPES
- CYLINDER SLEEVES
- WET SLEEVE ASSEMBLIES

PERMITE
REPLACEMENT PARTS

There's a Permite Jobber Near You!



● 55 Warehouse Stocks support the coast-to-coast network of Permite Jobbers.

Get Your BAKER Snow Plow Out of the "Mothballs"!

Every Baker Snow Plow must be kept in prime operating condition. There will be few, if any, new ones available this season. Wartime requirements continue to absorb our entire output.

So get out your Baker Snow Plow and take care of the tuning up, painting and lubrication required to put it in tip-top shape. Needed replacement parts should be ordered at once. If you treat a Baker right, it will give you a lot of additional service.

The time is coming when there will again be plenty of Bakers — truck and tractor plows — in "V", landside and reversible trip-blade types. A Baker Snow Plow is worth waiting for.

"V" type for 1½ to 5 ton trucks.

One-Way Landside Types for trucks of 1½ tons and up.

Reversible Trip-Blade Types for 1½ to 3 ton trucks.

THE BAKER MFG. CO.
571 Stanford Ave.
Springfield, Ill.

BAKER TRUCK & TRACTOR SNOW PLOWS

If it concerns Victory, It concerns us!

FREE PUBLICATIONS

(CONTINUED FROM PAGE 250)

tires properly and the application of synthetic tubes and flaps. Tube, valve, and flap data for all size tubes are included as well as recommended practice for rim and dual spacings.

Send the free postcard requesting L219 and let this publication assist you with your tire problems.

L220. New Welding Manual

Four methods of welding cast iron are discussed in a new 12-page illustrated booklet just released for publication by a well-known manufacturer of welding specialties. The booklet is titled, "Four Ways To Salvage, Reclaim and Conserve Iron Castings By Electric Arc Welding."

To give an idea of the practical value of this manual, one section points out that in welding cast iron the choice of material ought to be governed by such considerations as: whether the entire weld area must be machinable; whether the weld deposit must be similar in color to cast iron; whether the weld deposit must be cast iron; and the availability of proper equipment.

Much of the confusion and controversy which have surrounded the subject of making repairs on iron castings is dispelled in this booklet. Four types of electrodes for use on cast iron are described, and the characteristics and best welding procedures for each explained. Micro-photographs of the deposits made by the electrodes are used to show penetration, grain structure at the fusion zone, and grain structure of the deposit.

Truck operators, who have cast iron welding problems, should find much useful information in these pages. The free postcard, filled in with L220 will procure a copy of this booklet promptly.

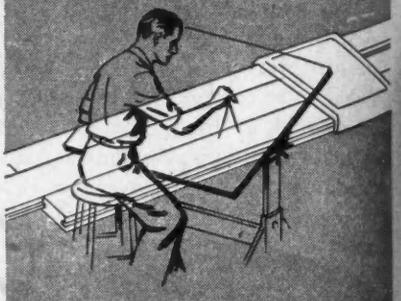
END

(Please resume your reading on P. 59)

R. J. Montgomery recently was appointed general sales manager of Packard Electric Division of General Motors, Warren, Ohio

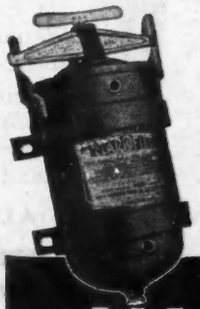
WGB CLAROFIERS

ENGINEERED TO THE JOB



TO ELIMINATE PREMATURE ENGINE WEAR

WGB Clarofiers are not cheap—but built to cost less in the end. Records prove that WGB oil clarofication is less expensive in the long run. That's because WGB is rugged, simple, and specially engineered for the heavy-duty job it's called upon to do. Sturdy WGB Clarofiers outlast your gas or Diesel engine, and their low-cost refill cartridges, easily installed without tools, cost less than an oil change. They keep oil amber-clear, prevent sludge and acid. Excessive wear on hard-to-get parts is eliminated . . . maintenance and oil changes are reduced to the minimum. Specify WGB Clarofiers for greater satisfaction and economy.



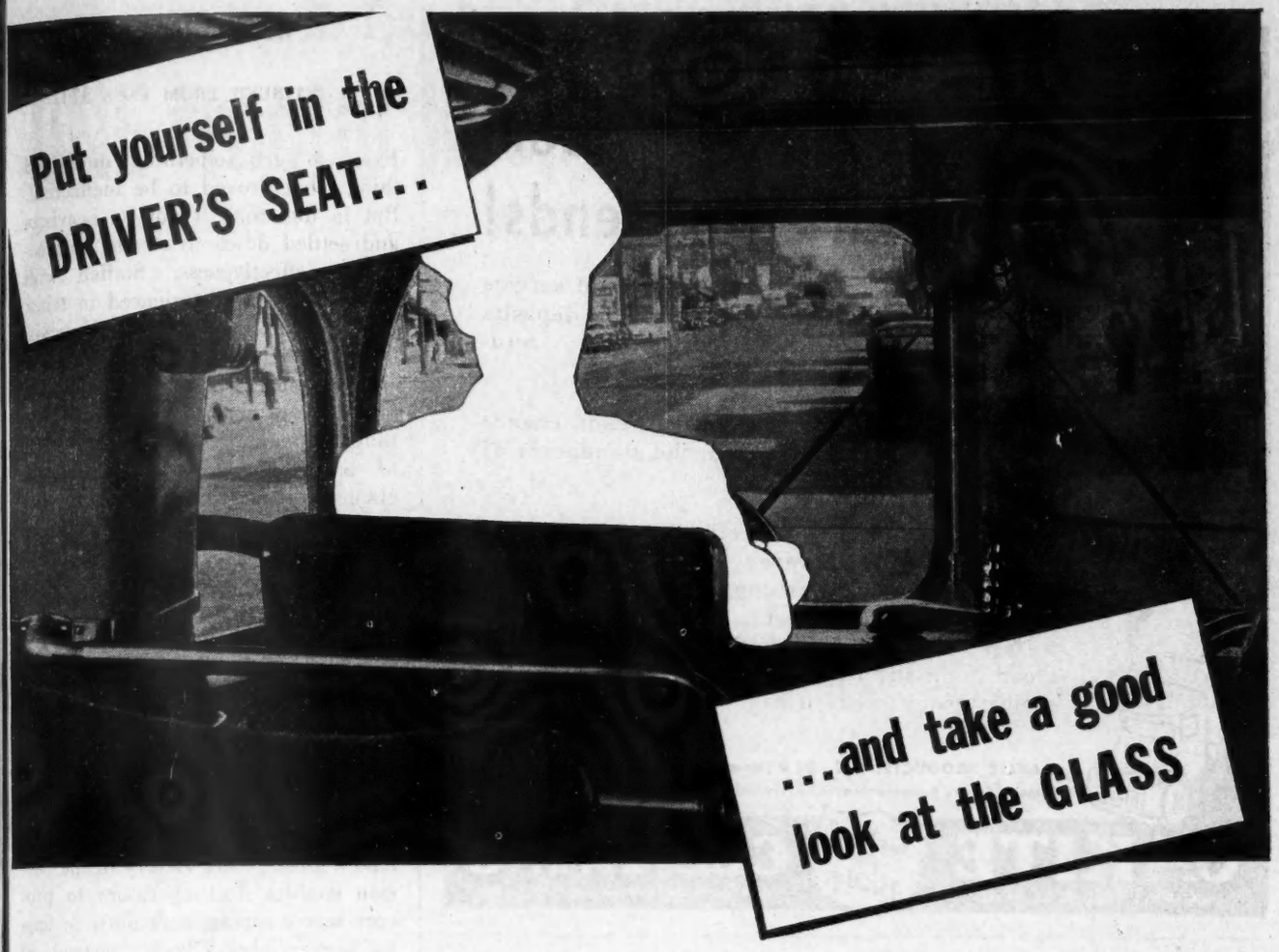
The free WGB book explains oil-clarofying, illustrates various WGB models for gas and Diesel engines. Send for it.

WGB

OIL CLARIFIER, INC.

KINGSTON, N. Y.

LET'S KEEP SEDIMENT OUT OF LUBRICATION

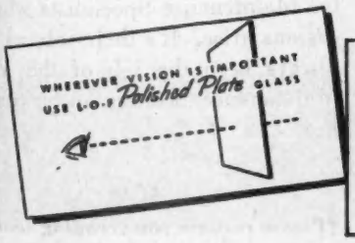


Is it free from cracks and discoloration? *Entirely* free? Remember that even the tiniest imperfection can become annoying and cause eye fatigue—for your driver must watch the road hour after hour through the glass.

Providing glass that is free from cracks, discoloration and distortions is an important step in prevention of accidents—a step to protect your drivers, passengers, freight and equipment.

Cracked or discolored glass marks your equipment as down-at-the-heels, and thus endangers good will you may have spent years in creating. Fortunately glass is plentiful enough to take care of your needs.

Check your fleet today for glass that needs replacement. Install L·O·F Clear Vision Hi-Test Safety Plate Glass — the glass that is ground and polished for maximum freedom from distortion. If you do your own replacement work, your L·O·F Distributor will keep you stocked in the more frequently needed sizes and shapes. If you send your glazing work out, choose a shop that uses genuine L·O·F Hi-Test Safety Plate Glass. Libbey·Owens·Ford Glass Co., 46124 Nicholas Building, Toledo 3, Ohio.



LIBBEY·OWENS·FORD
a Great Name in **GLASS**

One Minute Talks On Maintenance

CLEAN Garage Floors Pay Extra Dividends!

Long recognized by fleet operators and service station managers is that grease and oil deposits have a very harmful effect on rubber . . . actually shorten tire life.

Another point is that efficient floor maintenance is a matter of necessity from the standpoint of eliminating fire hazard!

Moreover, possibility of accident due to slippery floors and grease-covered work-pits should be considered. Floor washing can be made easy if you use Oakite Penetrant. It puts this work on a fast, low-cost basis. Gives you attractive, clean, non-slippery floors. Free booklet describes many other uses.

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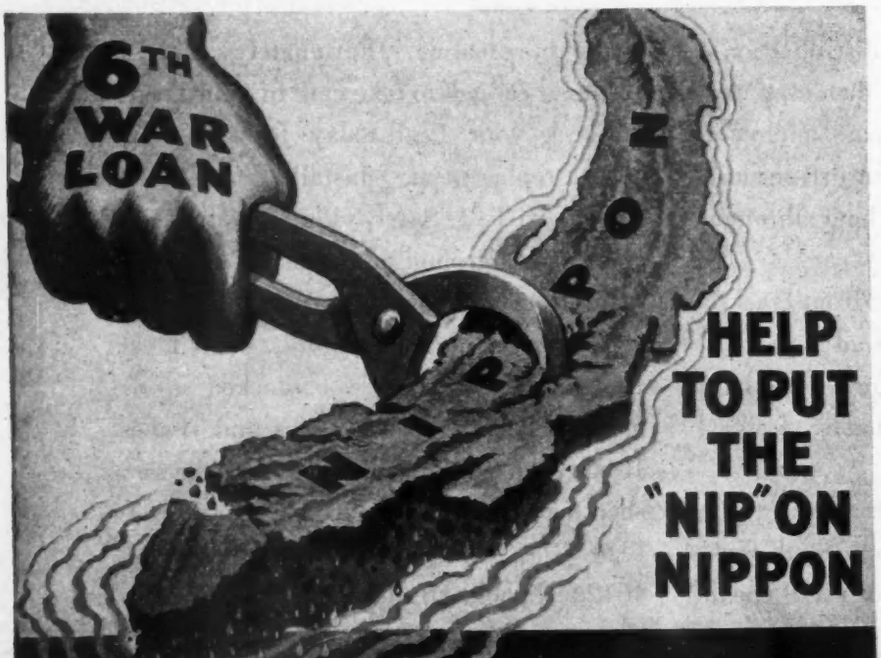
Technical Service Representatives in All Principal Cities of the United States and Canada

OAKITE
MATERIALS . . METHODS . . SERVICE

Buy Bonds for Victory

CLEANING
FOR EVERY CLEANING REQUIREMENT



HELP TO PUT THE "NIP" ON NIPPON

BUILD A BIGGER BRAKE SERVICE with EIS

Brake Parts
Brake Fluid
Brake Tools

EIS MANUFACTURING CO. · MIDDLETOWN, CONN.

EDITORIALS

(CONTINUED FROM PAGE 37)

haste to get something done did things that proved to be ineffectual. But in due time it got its bearings and settled down to steady, unspectacular effectiveness. Staffed with men who were experienced in truck maintenance, it has battled persistently with other Government agencies to assure truck transportation a fair share of controlled materials. It fought for more replacement parts of better construction. It put in claims for trucks and trailers that were based on the industry's needs, not on the notions of defeatists.

Particularly helpful to fleet operators have been the practical maintenance studies prepared with the cooperation of the Society of Automotive Engineers, whose assistance the Vehicle Maintenance Section wisely solicited. Equally helpful in a practical sense was the "rehabilitation plan" initiated by the Section to assure fleet operators unit replacements. And a more recent victory of the Section enables fleet operators to procure scarce replacement parts in time to prevent breakdown, instead of waiting until they occur.

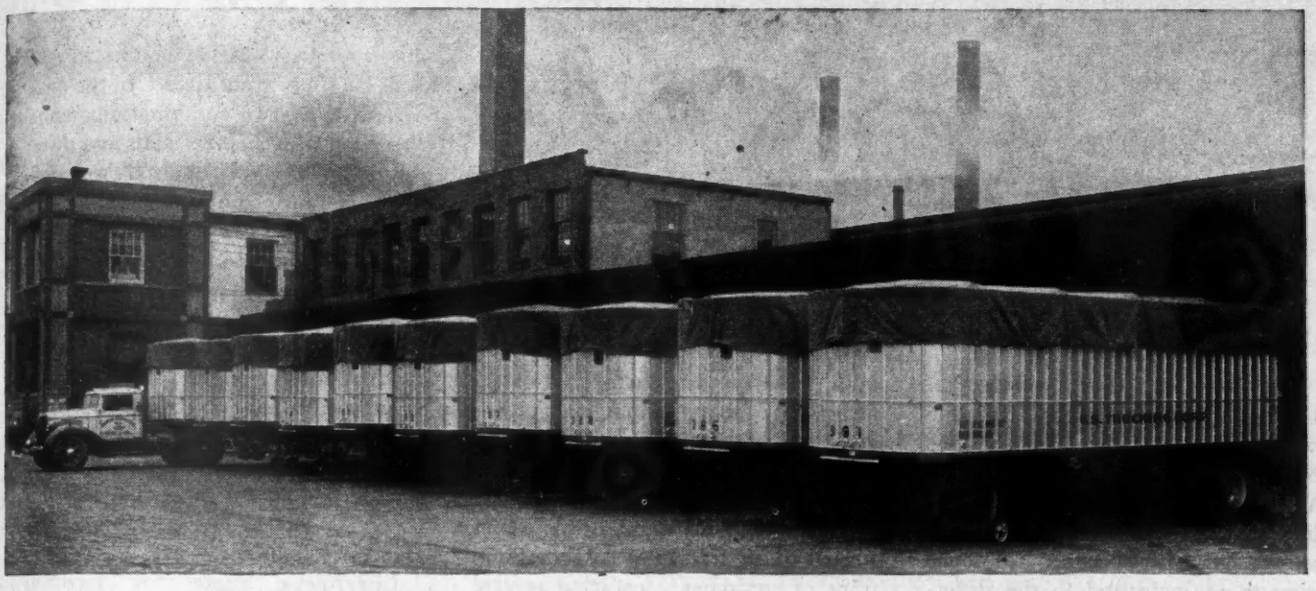
In order to avail itself of the practical counsel of men of the industry, the Section set up Maintenance Advisory Committees and these are actively functioning all over the country. They act in a dual capacity: they make suggestions based on local experience and disseminate information originating in Washington. The Maintenance Specialists who populate the various ODT districts are what might be called the long arm of the Vehicle Maintenance Section. They are there to give truck operators whatever personal attention is necessary to the solution of maintenance problems which come within their scope. The operators who have made use of them know their worth. And the tip we wish to pass on is that all fleet operators should make use of the Maintenance Specialists when occasions arise. It's their job, as it has always been the job of the Vehicle Maintenance Section, to provide relief.

END

(Please resume your reading on P. 38)

U. S. Trucking Corporation advises:

ONE tractor keeps 4 to 5 trailers in use



● **Here is one of the thousands of home-front trailer transport jobs . . . and one of the many U. S. Trucking freight transfer operations by trailer . . . that move goods with *flexible* efficiency!**

FROM terminals in New York City and adjacent territory, U. S. Trucking Corporation, carloading companies and other carriers transfer to local piers and other terminals general merchandise for consolidated cars forwarded via rail facilities.

Freight must be handled swiftly, flexibly, economically from congested piers and terminals. A fleet of U. S. Trucking trailers helps fill the bill!

One tractor keeps 4 to 5 trailers in use—being loaded, transferred or unloaded. From one pier or terminal it rushes each freshly loaded trailer to another terminal or pier for railroad carloading, picks up a freshly emptied trailer and returns it for reloading—then repeats this process.

This tractor-trailer transfer thus involves the operating cost of only *one motor, one driver*—as compared with 4 to 5 motors and drivers required otherwise.

Lapeer type Trailmobiles, with automatic coupling and uncoupling, help to speed the operation. In the metropolitan New York area, U. S. Trucking Corporation keeps about 140 trailers busy, of which around 100 are Trailmobiles.

Use Service Centers...and keep your present equipment rolling. Use Trailmobile Service Centers—52 of them, strategically located. Send for list.

The Trailmobile Company

Cincinnati 9, Ohio — Berkeley 2, California

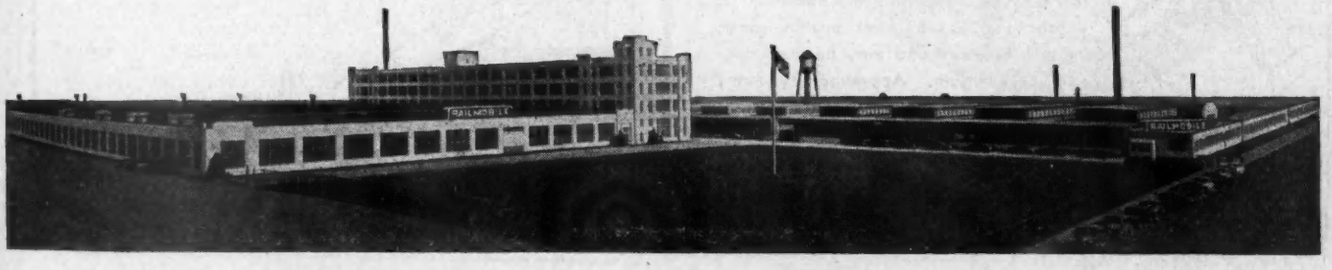
NEW TRAILMOBILES AVAILABLE!

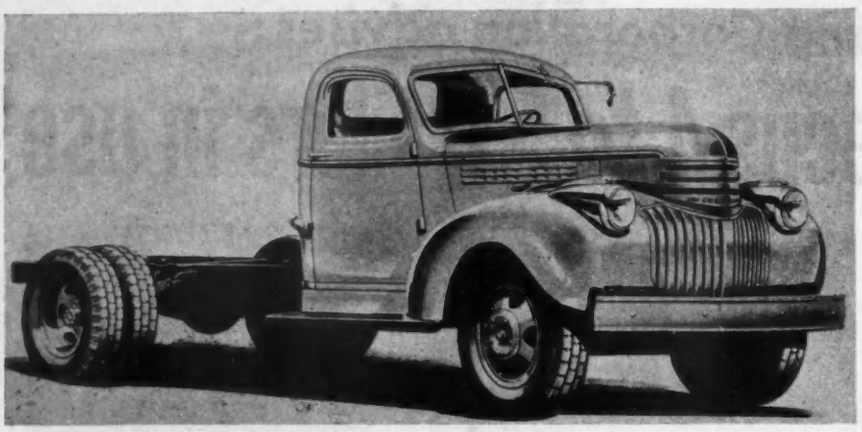
Pictured here is the headquarters plant of The Trailmobile Company—the spacious, streamlined factory where under ideal working conditions, an army of highly-skilled technicians and mechanics produce an endless stream of trailers.

As in the first World War, The Trailmobile Company has been honored in this second war with the "E" for excellence flag. Now, Government allocations permit the manufacture of Trailmobiles for commercial use. See your Trailmobile distributor for new Trailmobiles!

TRAILMOBILE

Commercial Trailers for War and Peace
The Vital Link in Flexible Transportation





Chassis and cab of one of Chevrolet's 134½-in. wheelbase models that will be manufactured during the first half of 1945

1945 Chevrolet Truck Line Comes in Two Wheelbases

The Chevrolet Division of General Motors announced that its 1945 line will cover two wheelbase sizes—134½ in. and 160 in., in heavy-duty chassis and cab models. They are alike in cab, power plant and all mechanical units, the only difference being those incidental to the different wheelbases.

The 134½-in. wheelbase model will be furnished in two combinations, both featuring the following extra-heavy-duty items: 235.5 cu. in. engine; oil bath air cleaner, 1 lb. capacity; and a 16 qt. heavy-duty radiator.

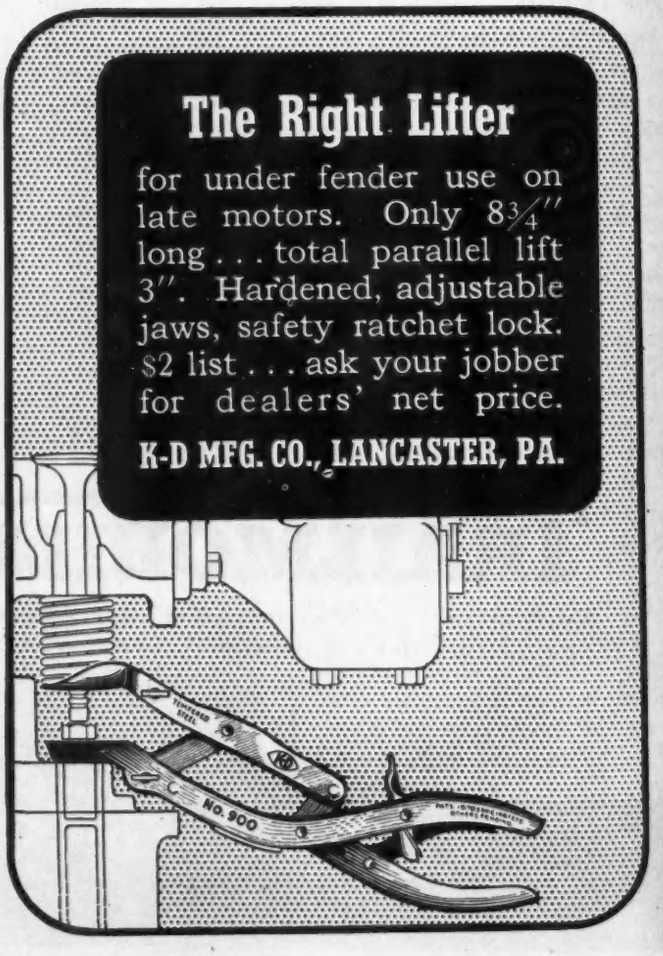
The 160-in. wheelbase model is furnished in five different combinations of equipment, featuring several extra-heavy-duty items. These are: 235.5 cu. in. engine; oil bath air cleaner, 1 lb. capacity; 16 qt., heavy-duty radiator; auxiliary rear springs; 7.50-20, 8-ply front tires. In the case of rear tires, two combinations come equipped with 7.50-20 duals and three have 825.20, 10-ply duals. Two combinations are equipped with heavy-duty axles and two feature two-speed axles. One combination is available with heavy-duty front springs and heavy-duty front axle.

All models will be equipped with the load-master engine, six cylinders, valve-in-head, 3 9/16 in. bore, 3 15/16 in. stroke. Maximum hp. is stated to be 93 at 3100 r.p.m.; taxable hp., 30.4; maximum torque, 192 lb.-ft. at 1000 to 1900 r.p.m.; compression ratio, 6.62:1.

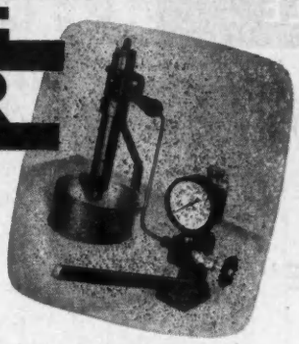
Chevrolet's quota for medium trucks, as announced recently by the WPB, is 27,407 for the first six months of 1945.

● This new one piece hose clamp can be installed and removed *easier* and *faster* because of its simple but sturdy ratchet-type locking mechanism. It weighs less, has a lower profile, exerts uniform pressure and may be used over and over again. Approved by Army Air Forces and Navy Bureau of Aeronautics. Sizes from ½" O.D. up. *Write for information.*

TINNERMAN PRODUCTS, INC.
2020 Fulton Road • Cleveland 13, Ohio


The Right Lifter
for under fender use on late motors. Only 8¾" long . . . total parallel lift 3". Hardened, adjustable jaws, safety ratchet lock. $2 list . . . ask your jobber for dealers' net price.
K-D MFG. CO., LANCASTER, PA.
No. 900

ADECO NOZZLE TESTER



FOR DIESEL ENGINES
AND HYDRAULIC DEVICES

★

KEEP DIESEL ENGINES RUNNING AT PEAK EFFICIENCY

With this sturdy, portable, light-weight Adeco Nozzle Tester, any mechanic can easily make quick, accurate tests on injector opening pressure, spray pattern, etc., and detect stuck needle valves and leakage around valve seats. Adeco advantages have made this America's most widely used nozzle tester. Tests both large and small injectors, on bench or engine. Avoids costly delays and possible damage to engine. Keeps diesels operating at peak efficiency.

Write for new illustrated bulletin.

AIRCRAFT & DIESEL EQUIPMENT CORP.
4411 NORTH RAVENSWOOD AVENUE
CHICAGO 40, ILLINOIS

POW-R-FLO

THE SUPPLEMENTARY LUBRICANT

STEPS UP PERFORMANCE CUTS DOWN COSTS!

JUST add POW-R-FLO to the gasoline and lubricating oil as directed. It penetrates into close tolerance and super-heated surfaces, keeps engines COMPLETELY lubricated, clean and FREE-RUNNING.

POW-R-FLO also dissolves gummy deposits, retards the formation of varnish, sludge and carbon, keeps sludge *in suspension* in the oil for easy removal by the regular oil filter. It keeps engines running much LONGER without overhauling, reduces fuel consumption. ABSOLUTELY HARMLESS to engines, no matter how much is used.

Packed in pints, quarts, 2 qt., and 5 gal. cans; 15, 30 and 55 gal. drums. Try it—you'll be pleased. Write for full information.

The MAUSTON Corporation
WINONA MINNESOTA

RUST PROOF

cooling systems up to 5 gallon capacity with

RUST MASTER

for only

19c

NO FUSS—NO MUSS
JUST POUR—NO MORE

Rust Master dissolves rust in the entire cooling system and Rust-proofs for a year — contains nothing harmful.

Six Master dissolves carbon—sludge and gum —relieves sticky valves and frees rings—saves gasoline.

Send for free preventive maintenance cost chart

DE-SLUDGE

For 2,000 Miles Driving With

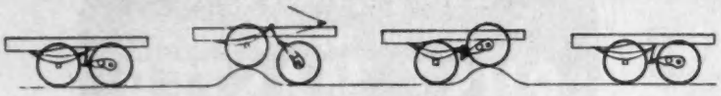
SIX MASTER

per 8 quart crank case

for only **20c**

Rust Master Chemical Co. MFG. CHEMISTS
712 BEACON STREET, BOSTON, MASS.
THE SILENT PARTNERS OF MOTOR EFFICIENCY

TRUXMORE
WORLD'S BEST 3RD AXLE



Write for Bulletin No. 34

"A TRUCK SHOULD BE A MONEY MAKING MACHINE"

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TRUCK EQUIPMENT CO. INC.
BUFFALO, N.Y.

IMPERIAL "K" *Freezetesters*

ACCURATE

Precision calibrations insure accurate results when you use Imperial "K" Freezetesters.

SINGLE SOLUTION TYPE

548-T for "Prestone" brand Ethylene Glycol
549-T for "Zerex"
551-T for Alcohol
552-T for "Zerone"
} Net Price to Fleet Owners $1.65 each

UNIVERSAL TYPE

546-T Universal Freezetester.....$3.45

• Bulletin No. 326 covers the complete line of Imperial Freezetesters.

Order from your Jobber

No. 548-T

THE IMPERIAL BRASS MFG. CO.
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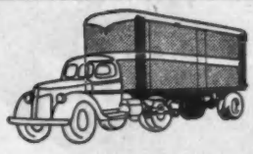

★ Keystone Stock Racks, Grain Trailers, Vans, Refrigerator and Platform Trailers are available for immediate delivery. Write—

KEYSTONE
TRAILER & EQUIPMENT CO., Inc.
2104 E. 10th St., KANSAS CITY, MO.

Manufacturers Must Give Operators Maintenance Aid

EDITOR'S NOTE: Excerpt from an address by J. N. Bauman, vice-president, The White Motor Co., before the recent annual meeting of The Indiana Truck Assn.

The first thing that I believe is important in the operation of any transport system is the proper application of whatever type of equipment is used. It is an absolute fact—and I am sure you will all agree with me—that when an engineer creates a power unit or a trailer that all his analysis of stress and rate of wear is based on certain load factors. It is only natural that if a certain material and dimension are determined upon for a main bearing, the wear requirements in the engineer's calculations are based on a certain type of load to which this part will be imposed. If this part and all the other 8000 parts in a power unit are subject to loads very much in excess of what the product was designed for, then there can be only one result and that is a much more rapid rate of wear than the engineers and factory built into the product when it was new and properly applied.

Real economy in the motor transportation business can only come from power units and trailer units that are accurately fitted to the work that is to be done.

The second thing in operations that I would like to present for your consideration is the need of the industry for a much higher grade of maintenance.

I believe that the industry has reached a stage where there must be a scientific application of maintenance that is based on a knowledge of how the product is built and what its requirements are in connection with conserving all the wearing parts within the job. Here the manufacturer of the equipment has been very seriously at fault. The job of maintaining equipment has been left in the hands of the operator and I think it is perfectly reasonable to ask what chance an operator has to do a good job of maintenance when he had nothing to do with the design of the truck and has no knowledge of the lubrication and adjustments that are necessary to get the maximum out of each part based on its original engineering concept. So, certainly it is up to the manufacturer to furnish such basic information to the operator as to the frequency with which each part should be lubricated, when it should be looked at and adjusted in order to provide a continuity of service without interruption and an overall understanding of the best way to conserve that vehicle which, after all, is your major tool of doing business.

It is my opinion that scientific preventive maintenance, meticulously applied, would not only very substantially reduce the operating costs of your vehicles but would build up goodwill among your customers and help you still further stabilize your business as a dependable, efficient and reliable mode of transport. This would call for close cooperation between manufacturer and operator so that the operator would have the benefit of scientific information from the designers and engineers who created the product and who are the only ones who really know what service and what care it should get to produce maximum results.

Henry G. Goehring Named To Industrial Relations Post

Henry G. Goehring, former assistant director of industrial relations at the White Motor Co., has been advanced to the post of director of industrial relations.

Take the Curse Out of Parts Cleaning

Do it better, quicker, easier and with safety by using

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Mechanical Parts Cleaner and Our

Kleer-Flo Solvent

20 Gal. Capacity

This specially prepared solvent can be purchased without priority. Write for complete details on both machine and solvent or

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DO-RAY CERTIFIED Products pass specifications of S. A. E. and I. E. S. meeting all I. C. C. requirements.

No. 70 GIANT-LITE
Ideal for trucks with rear doors extending full height of body. Angle bracket permits 4 different mounting positions.

No. 400 ZEPHYR
For trucks, passenger cars, trailers. Base curved and mounted on resilient pad—will fit most any surface—gasket seals lens and eliminates dust from inside lens and on bulb. Uses 1½ C.P. Bulb — 50% more light — 50% less current.

No. 600 SEALED BEAM FOG LAMP
With General Electric Sealed Beam Unit (Glaseal) Fog Lamp for use on medium and heavy motor trucks, trailers, passenger carriers, off-the-highway motor vehicles and motorized equipment. 6½ inch diameter, equipped with theft proof washers, victory grey finish on all models.

No. 1292 KNOBBY REFLEX
For trucks, busses or trailers—designed and constructed to withstand the severest abuse. White, amber, red or green.

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SAFER LIGHT — CERTIFIED DO-RAY PRODUCT Tested by RECOGNIZED TESTING LABORATORIES PASSING SPECIFICATIONS OF S.A.E. AND I.E.S. MEETING REQUIREMENTS OF I.C.C. — SAFER SIGHT

SAFETY LIGHTING AND REFLECTING EQUIPMENT

The Finest Truck Body Insulation

YOU CAN'T GET!

DRY-ZERO

● You can't get DRY-ZERO because all the Ceiba fibre that makes DRY-ZERO the outstanding insulation for truck bodies is needed by Uncle Sam for life-saving equipment and aircraft. When peace comes and Ceiba fibre is again available, specify DRY-ZERO in your new equipment. DRY-ZERO is water repellent, vermin-proof, *seven times lighter* than commercial corkboard, has low thermal conductivity of only .24 B. T. U.

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BALL AND ROLLER BEARINGS

For Engine Bearings
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ELECTRICALLY
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COMPLETE SPRING
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BISHMAN E-Z OFF RIM PROTECTIVE COMPOUND

Prevents RUST and CORROSION
SAVES TIME, LABOR and TIRES

Just paint it on rims before mounting tires and eliminate adhesion of bead or casing to rim. It seals against water seepage—protects tire, tube, flap and rim. No creeping of tire on rim. On badly rusted rims, it loosens rust scales for easy removal.

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ARE BUILT TO "PERFORM BETTER LONGER"

Rugged, heavy duty models for highway transportation, hauling heavy machinery, mining, excavating, quarrying, logging, etc.

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BURN-OUT PROOF DIRECTIONAL SIGNAL SWITCH

In complete sets of Signal-Stats or as a replacement switch—ASK YOUR JOBBER

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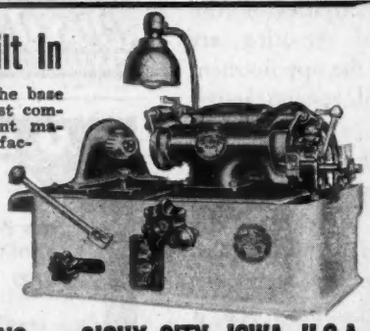
SIOUX VALVE FACE GRINDING MACHINE WET GRINDER

Wet Grinding Built In

Designed and built from the base up for wet grinding — most compact, complete and efficient machine of its kind. Assures factory precision in wet grinding valves, Ford valve tappets, and Ford valve stem ends. Chucking capacity ¼" to ⅝" diameter. No. 655 comes completely equipped. Write for full details.



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GENUINE ALMETAL PRODUCTS

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Flare HYDRAULIC BRAKE FLUIDS

- Commercial car maintenance men who know brakes best, specify FLARE HYDRAULIC BRAKE FLUIDS . . . blend perfectly with all original equipment and other first quality brake fluids.
- Laboratory and highway tests prove FLARE is tops in quality. Available in flit type and shop size cans.
- *Ask your wholesaler, or write.*

FLARE LABORATORIES DIVISION OF **THE BELL CO., INC.**
1858 W. KINZIE STREET, CHICAGO, ILL. ESTABLISHED 1930

Checks rear wheels as well as front.

What Are You Doing About Rear-Wheel Alignment?

You can't have perfect front-wheel alignment unless you also correct rear-wheel alignment troubles caused by defects in the chassis mechanism. That's why you need a Micro-Linor! It's the only instrument that checks the wheel-roll of all wheels, rear as well as front.

Micro-Linor Service Corporation
1629 West Fort Street
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WRITE FOR CATALOG

MICRO-LINOR
Patented "Tracer-Wheel" Principle

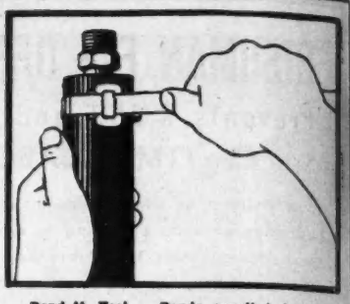
Tal's Pipe Bender. Style 2 bends ½" to 2" pipe. Style 3, ⅝" to 3" pipe. Complete, ready to use.

Pipe Bender That Bends Pipe Cold
Band-It Tool That Bands Everything

TAL'S PIPE BENDER bends pipe ⅜" to 3" dia. Produces smooth, uniform bends. Hydraulic principle makes it easy to operate with one hand. Compact. Portable. Eliminates elbows, fittings. Saves critical materials.

BAND-IT TOOL bands everything — hose, pipe, boxes, barrels. With steel band and buckles to fit, Band-It repairs leaks or breaks in pipe or hose. Useful for binding, supporting, reinforcing. Bands any dia. from ¼" to 30". Soon saves its cost. *Request Details*

AMERACO Industrial Specialties
122 S. Michigan Ave., Dept. O, CHICAGO 3, ILL.



Band-It Tool. Bands supplied in 100' Rolls, ⅜", ½", ⅝", ¾" and buckles to fit.

MAXIMUM SPEED RECORDER

Designed especially for commercial vehicles, locking device assures accurate information on maximum speed of operation during any one trip. Safeguards against abuse of engines by over-speeding.

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438 Fairfield Ave., Stamford, Conn.

Let your employees do a quick job of hand cleaning at the end of the shift. But make sure this quick job is also a *safe* job by supplying your wash-rooms with Magnus Hand Cleaner.

This speedy, effective cleaner does not contain harsh, scratchy abrasives that lead to skin infections and dermatoses. It does not contain strong chemicals that lead to tender skins and depletion of natural oils in the skin.

It does a fast job—a safe job and a thorough job, leaving hands smooth and soft.

Ask for a liberal trial sample to try out in one of your washrooms.

Magnus
MAGNUS CHEMICAL COMPANY
38 SOUTH AVENUE - GARWOOD, N. J.
INDUSTRIAL CLEANERS

CCJ NEWSCAST

(CONTINUED FROM PAGE 264)

space, will be devoted to the manufacture of a complete line of dump bodies and hydraulic hoists.

Aetna Changes Corporate Name

Announcement comes from Aetna, manufacturer of anti-friction bearings, that the company's name has been changed from Aetna Ball Bearing Co. to "Aetna Ball & Roller Bearing Co." This change will not affect the company's policies or personnel. It is believed that the new name is more accurately descriptive of the company's activities.

New Appointments at Alcoa

The Sales Engineering and Development Division activities of Aluminum Company of America are being expanded with the appointment of three men to head special activities.

Frank Jardine, who has been in charge of development work in Cleveland, has been made manager of the Development Division, Cleveland branch.

John R. Willard has been placed in charge of the Sales Development Division located at New Kensington, Pa., and B. J. Fletcher has been appointed chief engineer of the New Kensington branch.

Allman Looks to Soldiers to Spur Postwar Trucking

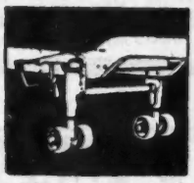
L. C. Allman, vice president of the Fruehauf Trailer Co., spoke before the Tennessee Motor Transport Assn. in Nashville, on "Individual Initiative and the Future of Highway Transportation."

He predicted that "the American soldier, who is seeing for the first time what commercial vehicles can

KEN-TIRE TOOLS
KEEP AMERICA'S KEY TRANSPORTATION ROLLING!

KEN TIRE TOOLS
SEE YOUR LOCAL JOBBER OR WRITE FOR ILLUSTRATED LITERATURE
THE KEN TOOL MFG. CO. AKRON, OHIO

AUSTIN THE ACCEPTED STANDARD . . .



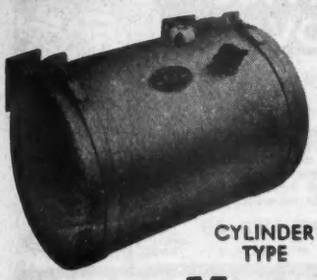
A complete line of LANDING GEARS.... HORIZONTAL, VERTICAL and FOLDING TYPES

Write for complete information on "SAFETY PROPS" and FIFTH WHEELS

AUSTIN TRAILER EQUIPMENT COMPANY MUSKEGON MICHIGAN

O.D.T. SAYS
TRUCKS are fighting equipment vital to Winning War..
KEEP YOURS FIRING
..every cylinder at Top Efficiency!
RAMCO 10 up PISTON RINGS

DAYTON Spoke Type Steel
WHEELS
AIR-COOL
BRAKE DRUMS AND TIRES
FOR TRUCKS, TRAILERS AND BUSES.
THE DAYTON STEEL FOUNDRY CO.
DAYTON, OHIO

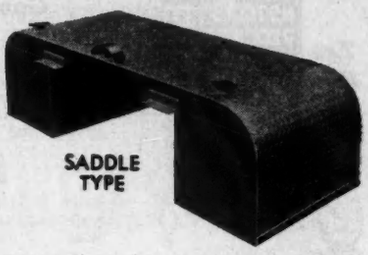


CYLINDER TYPE

You must get the MOST from your present truck equipment to keep War Material moving.

Large capacity SNYDER (patented) Safety Fuel Tanks will eliminate unnecessary refueling delays. By the use of the Flame Guard Safety Valve (standard on all Snyder tanks) added protection is afforded against fire hazards. Capacities range from 28 to 50 gallons in the cylinder type; 75 to 125 gallons in the saddle type. Approved by the Underwriters' Laboratories, Inc.

Distributed in all principal cities. Write for descriptive literature.



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STANDARD & SPECIAL TRUCKS
ANY SIZE OR TYPE

AVAILABLE TRUCK COMPANY
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GEAR PULLERS

Garage tools

BUSHING REMOVERS
CREEPER CASTERS
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INNER-SEAL
WATERPROOF
WEATHER STRIPPING

Inner Seal

for PASSENGER COMFORT

BRIDGEPORT FABRICS, INC.
BRIDGEPORT CONN.

WE WISH YOU A
MERRY CHRISTMAS
AND
HAPPY NEW YEAR

Wohlert CORPORATION LANSING MICHIGAN

Makers of *Engineered* Parts

CCJ NEWSCAST

(CONTINUED FROM PAGE 266)

do in time of extreme necessity, will return to teach all of us that motor transport is but a youthful industry and that it is only the beginning of a new day in America's system of rapid, low-cost transportation."

Allman visioned new jobs for more and more people in motor transport when laws are liberalized with regard for safety and the public interest.

Treasury's "Surplus Reporter" to List Available Goods

The national selling program for disposition of surplus property has been revised, according to the Treasury's Office of Surplus Property. Information on all large quantities of goods will now be available through a "Surplus Reporter," which will be issued from each regional office at regular intervals. This will

(TURN TO NEXT PAGE, PLEASE)

When it comes to maintaining low temperature in moving dairy products, Beatrice Creamery Co., Denver, Col., known as the Meadow Gold Dairy, does it in a novel way. The big, refrigerated Fruehauf Trailer, mounted on a tandem rear axle, is divided into three completely separated compartments, each being approximately 1/3 of the total 28 ft. length. This truck-trailer is completely insulated, the sidewalls and floor having a thickness of 4½ in. of spun-glass insulation, with the ceiling having 6 in. at the center, tapering to 4½ in at the eaves. Each compartment has its own side doors, split horizontally so that only a small opening need be made.

CHECK THE BEARINGS TOO!

LINK-BELT
ROLLER BEARINGS

Important aid to keeping motor transport functioning. Avoid costly bearing failures—and replace with free-rolling, self aligning LINK-BELT Roller Bearings.
Made by makers of famous LINK-BELT Silverstreak Silent Timing Chain. 9457

LINK-BELT COMPANY
519 N. Holmes Ave., Indianapolis, Ind.
Warehouses in all principal trading centers

BALDOR

BATTERY CHARGERS

Improved ventilation for cool operation, longer life and greater efficiency. They stand the strain of peak loads.
12-batt. size....$28.00 less bulb

BALDOR ELECTRIC CO.
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SELF-CLOSING MONKEY LINK

Trade Mark Reg. U. S. Pat. Office

Good Truck Fleet Operation Includes

TIRE CHAIN MAINTENANCE

Don't risk the loss of any of your irreplaceable trucks because of the lack of proper inspection and repair of your tire chains. Far sighted economically minded Operators are now preparing for winter driving and checking their stock of

MONKEY LINKS

Keep MONKEY LINKS in your shop and on your trucks—No tools required; your drivers can fix a break immediately. Don't delay. Order your winter's supply of MONKEY LINKS today.

FLOWER CITY SPECIALTY CO., Rochester, N. Y.

At All Reputable Jobbers

SERVICE-PROVED

GRUELING years of toughest service prove Blackhawk Hydraulics superior in safety, rugged dependability and utility. "Service - Proved" Seal found only on Blackhawks. Only complete line of hydraulic hand jacks—models up to 50 tons capacity.

BLACKHAWK MFG. CO.

Pace ... St. Milwaukee, Wis.

BLACKHAWK

POWERFUL
Emergency Signal Gives Driver a Feeling of Security!

BUELL HIGH PRESSURE AIR HORNS speed up schedules . . . keep the highways open so that a steady cruising speed is maintained. *12% better road time is the result!*

AIR COMPRESSOR

Why not investigate the possibilities of the Buell Air Compressor for your Post War Plans. The many ways in which it can serve your needs may surprise you. Put air to work. It is clean, powerful and reliable. Write us, advising all details as to volume, pressure, etc., and our engineers will gladly aid you in solving your problems.

BUELL MANUFACTURING CO.
2988 COTTAGE GROVE AVE., CHICAGO, ILL., U.S.A.

OVER 70% OF ALL MAKES OF TRUCKS AND BUSES ARE *Zollner* EQUIPPED

ZOLLNER
HEAVY DUTY PISTONS
ZOLLNER MACHINE WORKS ... FORT WAYNE, IND.

MERRY CHRISTMAS

KING BEE

AMERICAN AUTOMATIC DEVICES CO.

Harrison, Throop and Congress Streets
Chicago, Illinois

CCJ NEWSCAST

(CONTINUED FROM PAGE 267)

advise firms on Treasury's mailing list what the Treasury has to sell, the area in which the material is located, and the general method which will be used to sell it. Interested purchasers will then indicate their interest to the regional office on specific items.

The new plan will eventually cover all eight divisions of the Treasury's Office of Surplus Property and will furnish more complete information on surplus property availability.

New Booklet Describes Clark Equipment's Line

The Clark Equipment Co., of Buchanan, Mich., has prepared a new pocket-size booklet describing the character and variety of Clark products. Its 32 pages carry illustrations and brief descriptions of each item. A copy is offered to those requesting it on company stationery.

Cheap Synthetic Rubber Possible, Says Dr. Semon

A prediction that synthetic rubber can be produced "on a peacetime basis" at 10.7 cents per pound—against the prewar market price of 22 cents for natural rubber—was made by Dr. Waldo Semon, director of pioneering research of the B. F. Goodrich Co., before the National Industrial Chemical conference in Chicago.

As for the possibilities of synthetic rubber competing with natural rubber in durability and performance in the postwar world, Dr. Semon was optimistic. He stated that, in the future, there might be one type of synthetic specifically tailor-made for inner tubes, another for coating the cords in the carcasses, another for sidewalls and still another for treads.

MAINTAIN TOUGH SCHEDULES SAFELY

GATKE *Custom-Bilt* BRAKE BLOCKS

ASK YOUR GATKE JOBBER

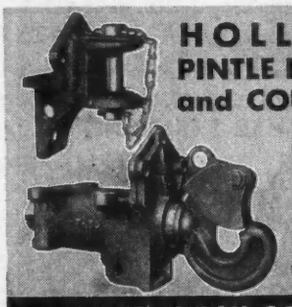
GATKE CORPORATION 228 N. LaSalle, CHICAGO

"A load behind is a trip ahead"

Kingham UNIVERSAL TRAILERS

Light Weight — Dependable

KINGHAM TRAILER CO.
INCORPORATED
LOUISVILLE, KENTUCKY



HOLLAND PINTLE HOOKS and COUPLERS

A complete line, engineered to meet the most exacting needs of all truck and trailer operations. Write for catalog.

HOLLAND HITCH COMPANY
HOLLAND, MICHIGAN, U.S.A.

UNITS AVAILABLE

To holders of Certificate of Transfer P. D. 321, or Government Exemption Permit P. D. 322.

GRICO

2-AXLE DRIVE

19842 W. Eight Mile Rd.
Detroit 19, Michigan

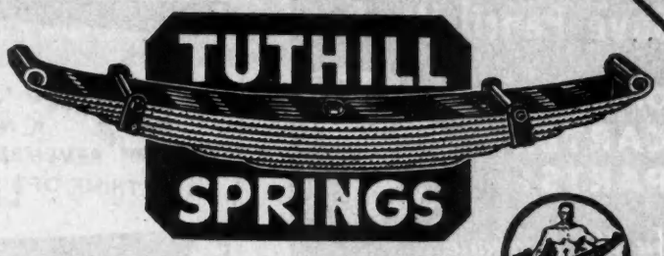
WHY WE RECOMMEND

THESE four steps insure built-in quality in TUTHILL Springs:

1. Material control based on analysis.
2. Heat treatment, pyrometer controlled.
3. Shot-blasting with latest equipment.
4. Inspection and test for uniformity.

We make both standard and special springs.

Specify your requirements.



TUTHILL SPRING CO. 760 W. POLK ST. CHICAGO 7

IN WAR AS IN PEACE

CITIES SERVICE OILS
ONCE-ALWAYS

YOUR SYMBOL OF SERVICE

THERE IS A GUARANTEED

Pedrick

ENGINEERED SET

of PISTON RINGS

FOR

EVERY COMMERCIAL VEHICLE

HOOF FULL POWER GOVERNORS

SEND FOR FREE BOOKLET
HOOF PRODUCTS COMPANY
6543 SO. LARAMIE AVENUE, CHICAGO 38, ILL.

FRINK SNO-PLOWS

Both "V" TYPE and ONE WAY BLADE TYPE

hand or power hydraulic control

FOR ALL MOTOR TRUCKS FROM 1½ to 10 TONS

Write for catalog 38AC and 38BC with discount to truck dealers

CARL H. FRINK, Mfr., CLAYTON, 1000 Isl., N. Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

CCJ NEWSCAST

(CONTINUED FROM PAGE 268)

15,247 Vehicles Released to Civilians in October

A total of 15,247 vehicles was released under the truck rationing program during October, the Automotive Division of the War Production Board announced.

Civilian users received 350 light trucks, 7975 medium and 2574 heavy trucks and 2499 trailers. Holders of Government exemption permits received 1555 medium trucks, 186 heavy trucks and 108 trailers.

Since the rationing program became effective March 9, 1942, a total of 320,038 vehicles of all types has been released. This includes 51,214 light, 188,923 medium and 45,313 heavy trucks and 34,588 trailers.

New Lathe Catalog Designed For Postwar Planning

The South Bend Lathe Works of South Bend, Ind., has a new 68-page catalog (100-D) ready for distribution. It describes all South Bend engine, toolroom, and precision turret lathes with illustrations on constructive features. The primary purpose of this catalog is to aid lathe users in their postwar planning.

WPB Allots ODT More Materials for 1st Quarter

The supply of controlled materials for domestic transportation in the first quarter of 1945 will be greater than that allotted for the last quarter of 1944, but less than the amount requested by the Office of Defense Transportation, the ODT was advised by the War Production Board.

The WPB allotted 155,000 tons of carbon steel for automotive replacement parts, for which the ODT had

(TURN TO NEXT PAGE, PLEASE)

"I'LL PUT MY COAT ON MYSELF UNTIL YOU USE MAGNUS HAND CLEANER"

The men (and women) in the plant will use the hand cleaner that works fastest and with the least scrubbing. If it's harsh and harmful, they don't know or care.

But you should care, because cheap, gritty, strongly alkaline or solvent cleaners lead to infections and dermatoses that rob the plant of too many man-hours of production.

Magnus Hand Cleaner is safe, speedy and economical. It belongs in your plant washrooms.

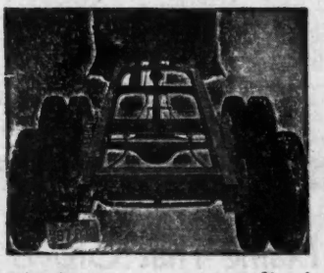
Want us to send a sample for a thorough try out?

Magnus MAGNUS CHEMICAL COMPANY
38 SOUTH AVENUE • GARWOOD, N. J.
INDUSTRIAL CLEANERS

LITTLE GIANT
AUTOMOTIVE TRUCK EQUIPMENT

TEN WHEELERS

for 1½ to 5 Ton Trucks



Greater tonnage . . . more profit. Increase carrying capacity up to 20 tons. Extend frame to any desired length. Load kept in perfect balance . . . no teeter or end-sway. Simple, sturdy, no intricate parts. Timken bearings; steel castings; hydraulic brakes. Easily installed in 3 hours. 3 sizes. *LOW COST. No priority rating required.*

Also makers Little Giant Frame Extensions, Hand Hoists, Wrecking Cranes.

Write for Circulars, Low Prices

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1532 No. Adams Peoria, Illinois

Save Pencil Work
Order and Sell
CARTER
PARTS
by the Package!
Carter Carburetor Corporation
2820-56 North Spring Ave., St. Louis, Mo.

Logan . . .
A NAME TO REMEMBER WHEN YOU THINK OF LATHES
LOGAN ENGINEERING CO.
CHICAGO 30, ILLINOIS

KOETHERIZING
The one best way to restore collapsed pistons to original factory fit.
•
Every pulled piston should be Koetherized.
KOPPERS COMPANY
American Hammered Piston Ring Div.
BALTIMORE, MD.

Dart Trucks
HEAVY DUTY FOR
OFF THE HIGHWAY SERVICE
— Specially Designed for —
Coal Mining—Iron Ore Mining—Copper Mining—Pit and Quarry—Logging—Oil Fields—Etc.
It Costs No More for Trucks Specially Built to Fit Your Needs. Have Our Engineers Visit and Analyze Your Operation.
DART TRUCK COMPANY
KANSAS CITY, MO.

requested 160,000 tons. This is the largest amount provided for this purpose since the start of the war, the ODT pointed out.

An allotment also was made for the production of light trucks at the rate of 10,000 units a quarter, the first authorization for that purpose since the war began. The ODT pointed out that farmers take more than half of the light trucks produced. Carbon steel requirements for trucks, integral buses, and truck trailers were met with amounts sufficient to cover production schedules.

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"FLYING PISTON"
SIMPLEX
Piston Rings

350 of 500 WPB Orders to Go On V-E Day, Says Krug

THE WPB Task Committee, which has been working out the details of the WPB V-E Day plan, issued its first report Oct. 1. WPB Chairman J. A. Krug, in announcing the report, emphasized that it was not final and subject to change. However, it does clear up some of the misconceptions which arose when WPB announced its intention of removing practically all production controls on V-E Day. In other in-

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★ ★
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Cleveland, Ohio

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(CONTINUED FROM PAGE 270)

stances the report backtracks on statements made earlier by Mr. Krug.

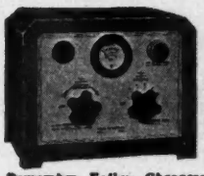
The report is emphatic in pointing out that there should be no "spoon feeding" of the economy. No attempt should be made to curtail individual initiative in the search for and the purchase of materials and components that will remain in short supply for only a brief period. No action should be taken that might hamper private enterprise or ingenuity, either by restricting members of an industry to historical patterns of business or by preventing entry of newcomers. Except for military requirements for the war against Japan, it is expected that essential needs largely will be met without Government control, either restrictive or supporting.

The report, which has been distributed to other Government agencies and to WPB industry divisions for comment and suggestions, recommends the elimination of all WPB orders with the exception of about 150, which will be greatly simplified. In all, some 500 L, M, P, E, U and R orders are on WPB books at present. Of these about 200 apply to chemicals, textiles (including leather and cordage), and forest products (including containers), in which widespread shortages are expected to continue. Only half of the orders on this group of tight materials can be revoked immediately; about 100 of which will have to be retained.

Of the other 300 orders, covering mainly metals and metal products, it is proposed to revoke 250, leaving only 50. Thus, all told, the proposal calls for revoking 350 out of 500 orders. In effect, orders controlling metal products are to be virtually eliminated.

END

(Please resume your reading on P. 84)

VALLEY CHARGERS HAVE Gone To War

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